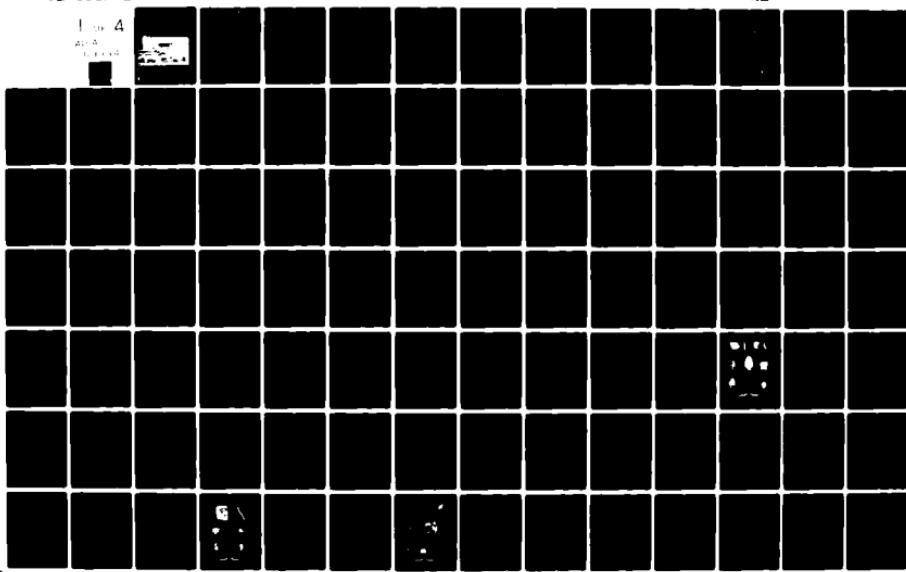
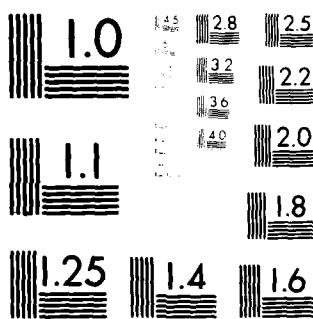


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Archeological Investigations

At John Redmond Reservoir,

East Central Kansas, 1979



BY
RANDALL M. THIES
KANSAS STATE HISTORICAL SOCIETY

Source of funding: U.S. Army Corps of Engineers, Tulsa



(2)

ARCHEOLOGICAL INVESTIGATIONS

AT JOHN REDMOND RESERVOIR, EAST CENTRAL KANSAS, 1979.

by
Randall M. Thies
Archeology Department

Kansas State Historical Society, Inspector



Thomas A. Witty, Jr.
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Report for May 1979

submitted to

The U.S. Army Engineer District, Tulsa

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ABSTRACT

In May, June, and July of 1979, an archeological survey investigation was carried out at John Redmond reservoir on the Neosho river in east central Kansas. The work was conducted by the Kansas State Historical Society for the U.S. Army Engineer District, Tulsa. A total of 85 previously unknown sites were identified, and 28 sites designated in earlier surveys were revisited. Limited testing was conducted at 25 sites, and extensive test excavations were carried out at four others. The efforts of the regular crew were supplemented by survey and testing activities of some 70 Kansas Archeological Training Program enrollees, directed by Society archeologists over a two-week period in June.

Evidence recovered as a result of the investigation indicates that the reservoir has been occupied intermittently, if not continuously, from the middle or late Archaic up to the present era, or from ca. 3,000 B.C. to the present day. Most of the prehistoric sites appear to represent Middle Ceramic occupations presumed to date from ca. A.D. 1000-1500. The report describes the sites investigated, concentrating on primary data relating to the newly discovered sites and the results of the testing activities. The sites are described in terms of their location, environmental setting, artifact inventories, significance and investigative potential. General conclusions based on this data are presented, along with recommendations relating to future investigations and cultural resource management. Many of the sites merit no further work, and others require testing for a determination of their scientific significance. A limited number of sites appear to have strong investigative potential and have been recommended for extensive testing and/or preservation.

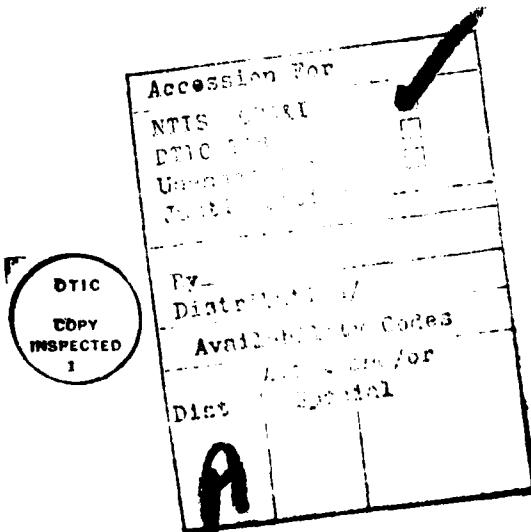


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The investigation was immeasurably enhanced by the skills and efforts of the regular crew, who delivered a professional performance despite conditions of oppressive heat and humidity and occasional floods and tornado-like winds. The crew consisted of D.E. Maul, who served as foreman, Mervin G. Floodman, Barbara L. Morley, Dennis R. Porter, and Dale L. Wedel.

Two individuals working within the project area were of particular help during the investigation. James D. Lichlyter, a longtime resident of the area now working as a game protector for the Kansas Fish and Game Commission, generously provided invaluable information concerning the whereabouts of unrecorded sites in the reservoir. Michael J. Long, manager of the U.S. Fish and Wildlife Service's Flint Hills National Wildlife Refuge, ensured that we had unhindered access to all lands within the refuge and provided full support for our work, support which included the loan of a sump pump and the services of a backhoe. Thanks are hereby extended to both individuals.

Staff members of the Archeology Department of the Kansas State Historical Society deserve special recognition for their parts in the directing of the Kansas Archeological Training Program activities. John D. Reynolds and Thomas P. Barr were in charge of the excavations at 14CF357, while Thomas A. Witty Jr., Don D. Rowlinson, and Kenneth A. Ashworth had responsibility for the excavations at 14CF369. William T. Brogan was in charge of the survey efforts. Cataloging and preliminary laboratory analyses of the materials produced by the various investigations was directed by Terry K. Johnson, who also identified many of the faunal remains recovered from 14CF357. All these individuals performed admirably despite long hours and sometimes trying conditions. The many Kansas Anthropological Association members who participated in the undertaking also deserve recognition. Thanks to their efforts and those of the Society staff, the 1979 training program can be counted as a significant and valuable contribution to the overall investigation of the reservoir.

Several members of the Youth Conservation Corps, operating out of the Flint Hills National Wildlife Refuge office, also deserve recognition for their participation in the testing of 14CF369. Included within the group are Kimbra Gash, Jeffrey Hogan, Mike Stain, Maggie Stoner, and supervisors Lisa Fillmore and Susan Young.

Specialized technical assistance was obtained through the services of the Kansas Biological Survey. The director, Dr. Ronald L. McGregor, identified the floral remains collected during the investigation, and Dr. A. Byron Leonard identified certain molluscan remains. Their kind assistance is appreciated.

Preparation of the report was aided by several members of the Archeology Department staff. Diane L. Good, Laboratory Supervisor, facilitated the artifact analyses, and Don D. Rowlinson and John D. Reynolds provided much-needed support in the form of advice and editorial suggestions. Typing of the report was carried out by Belinda K. Neal and Barbara L. Tibbitts. The efforts of all these individuals are much appreciated.

All the records, maps, photographs, and specimens recovered during the investigation are filed at the Kansas State Historical Society building in Topeka.

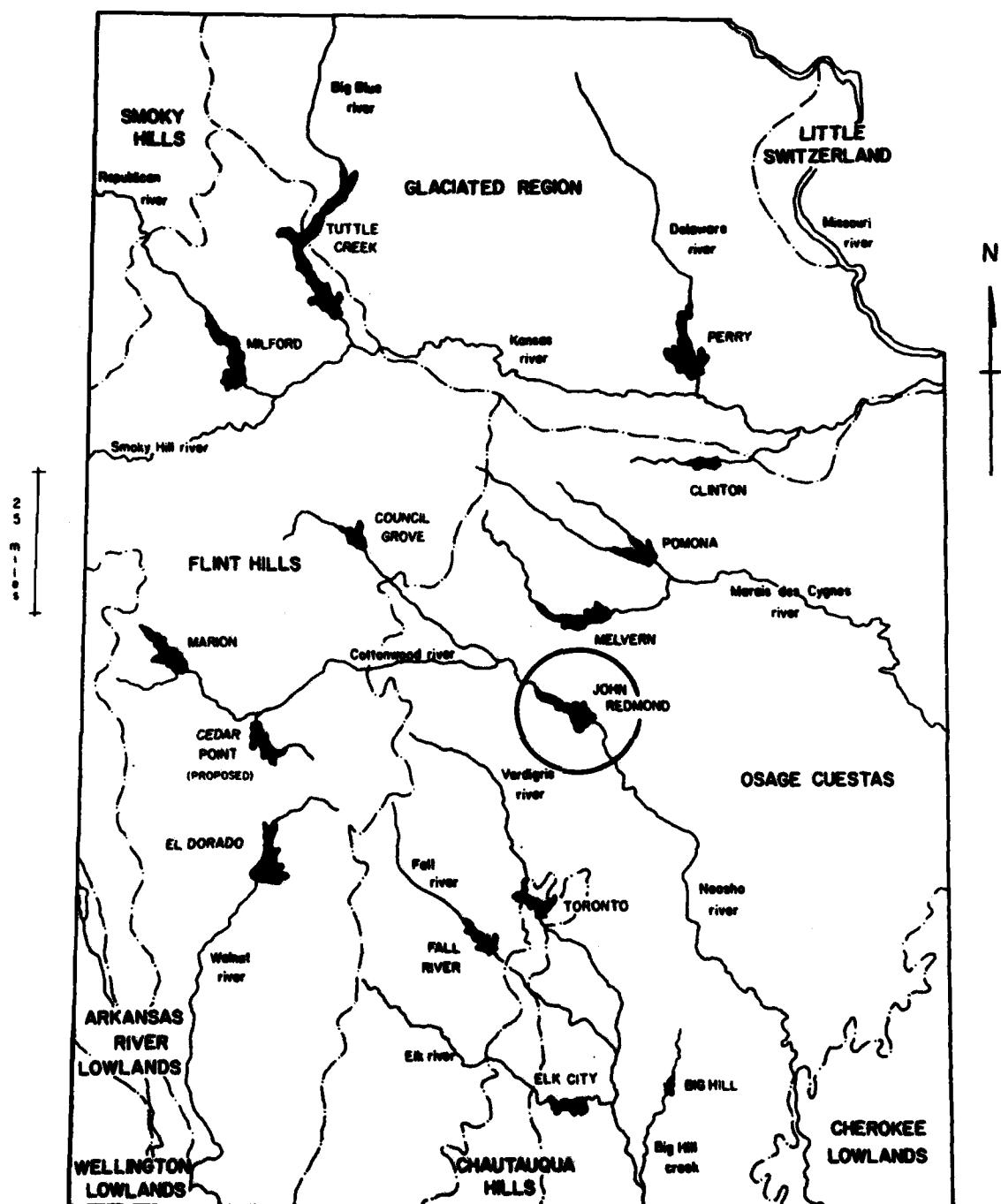
I. INTRODUCTION

John Redmond reservoir, located on the Neosho river in east central Kansas (see Figure 1), is a multipurpose structure designed primarily for flood control. Authorized by Congress under the Flood Control Act of 1950, the reservoir project was started in 1959 and placed in flood control operation in 1964. The reservoir consists of a permanent conservation pool which covers 9,400 acres (ca. 3,804 ha) of land and has a shoreline 59 miles (ca. 95 km) in length, and a flood control pool which remains empty except during times of flooding, when up to 31,700 acres of land (ca. 12,829 ha) may be inundated. The conservation pool level lies at 1,036 ft (ca. 316 m) above mean sea level (MSL) and the flood control pool level at 1,068 ft (ca. 326 m) MSL. Most of the upper or upstream portion of the reservoir is managed by the U.S. Fish and Wildlife Service as part of the Flint Hills National Wildlife Refuge. The refuge consists of approximately 18,500 acres (ca. 7,487 ha) of land. A smaller area in the lower reservoir, approximately 1,472 acres (ca. 596 ha) in size, is licensed as the Otter Creek Game Management Area and managed by the Kansas Forestry, Fish and Game Commission (see Figure 2).

In February, 1979, as the result of negotiations carried on over a period of several months, the Kansas State Historical Society (KSHS) entered into a contract with the U.S. Army Engineer District, Tulsa, to undertake a survey and assessment of cultural resources in John Redmond reservoir. The present paper reports the results of the fieldwork which took place in the summer of 1979 under the auspices of this contract.

The contract called for the Society to conduct "...a reconnaissance study to locate, describe, and evaluate cultural resources (historical and archeological) on Corps land at John Redmond reservoir." Fieldwork was to last for approximately nine weeks and the laboratory processing, site analysis, and report writing 27 weeks. The Scope of Service required the contractor to:

- a) gather and study all available publications and additional unpublished material relating to previous archeological work in the project area;
- b) determine specific site locations by means of a reconnaissance survey, consisting of on-foot coverage of the project area;
- c) conduct testing, at the discretion of the contractor, to determine the areal extent and depth of cultural deposits;



JOHN REDMOND LAKE AND RELATED AREAS
IN EASTERN KANSAS



FIGURE 1

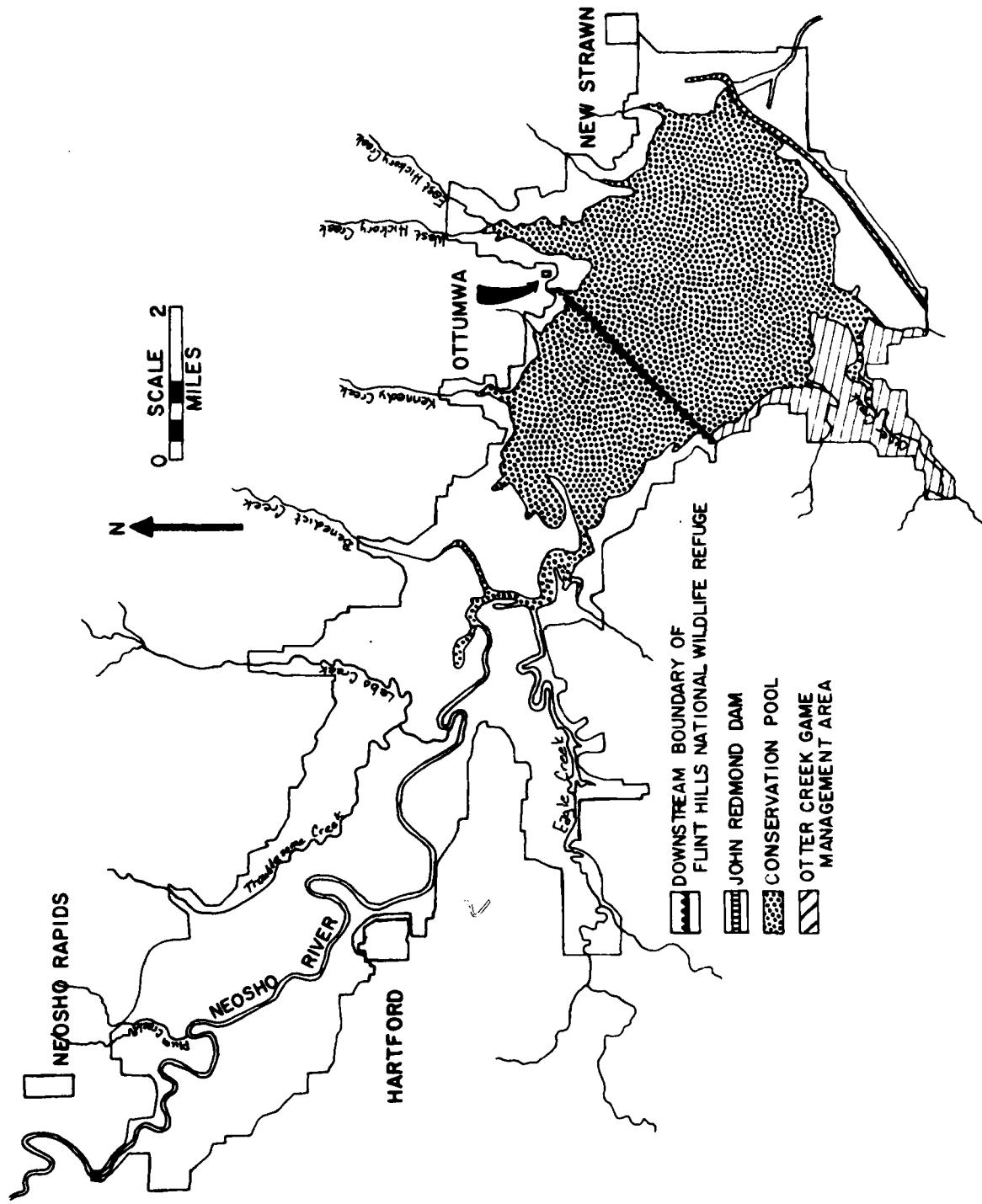


FIGURE 2. Map of John Redmond reservoir.

- d) submit a report;
- e) complete and submit National Register nomination forms for individual sites or districts which appear to meet eligibility criteria; and
- f) prepare a Cultural Resources Management Plan for the project area.

The contract also specified certain minimal requirements for the report. It was to contain the following:

- a) a research design outlining the theoretical approach applied to the investigation, a description of the environment in the survey area, a summary of the cultural history of the area, a summary of previous archeological research in the survey area, a discussion of methodology, and a statement of the number of person-days required to complete the survey and the number of acres examined.
- b) the survey results, including the relationship of the results of the research design, complete site descriptions and artifact analyses. Site locations were to be indicated by both Township and Range and Universal Transverse Mercator (UTM) designations.
- c) site evaluations, a list of properties recommended for nomination to the National Register of Historic Places, and completed National Register forms for these properties.
- d) a Cultural Resource Management Plan for the project area containing recommendations on a site-by-site basis.
- e) maps showing site locations and areas surveyed.
- f) copies of completed State Archeological Survey forms for each site.

II. THE ENVIRONMENTAL SETTING

Physiographically, John Redmond reservoir is situated near the western border of the Osage Cuestas division of the Osage Plains section of the Central Lowlands province of the Interior Plains physiographic division of North America (Fenneman 1957, Schoewe 1949, Wilson 1978). The Flint Hills Upland, also a major division of the Osage Plains, lies some 30 miles (ca. 48 km) to the west of the reservoir.

The Osage Cuestas region is characterized by relatively low relief. The flatness of the landscape is relieved by the presence of long, low, easterly facing escarpments, or cuestas, which were formed by the exposure and consequent erosion at the ground surface of alternating beds of limestone, shale and sandstone. These strata dip gently to the west and northwest, forming a series of parallel ridges having gently sloping west faces and steeply sloping east faces. The topography is one of long, low, rolling hills and wide, shallow valleys.

Within the general project area, three major physiographic units are discernible: the bottomlands and flood plain of the Neosho river and its tributaries, formed in recent, Holocene-age alluvium and represented by such soil types as Verdigris, Osage, and Lanton; the immediate uplands, or valley walls, formed in old alluvium and/or material weathered from shale and represented by such soil types as Eram, Dennis, Kenoma, Summit, and Woodson; and the "true" uplands, located usually at some distance from the river and creek valleys, and formed in old alluvium and/or limestone, sandstone, and shale bedrock and represented by such soil types as Clareson, Collinsville, and Olpe. The immediate uplands are, in actuality, the remains of old alluvial terrace formations; generally speaking, they form a relatively flat "bench" along the edge of the valleys, from 5-25 m above the bottomland but below the "true" uplands located at higher and more variable elevations and at further distances from the stream courses. Very little of the "true" uplands is located within the project boundaries, since the level of the flood pool and conservation pool is such that only the bottomland and immediate uplands are directly impinged upon. In the following report, only bottomland terraces will be referred to as "alluvial terraces." The immediate uplands, defined primarily on the basis of soil type rather than physiographic distinctness, will be referred to as "uplands," a distinction which is justified not only by the parent material of the soil but also by the native vegetation under which the soil formed.

Hydrologically, the project area is dominated by the Neosho river. The river originates in the Flint Hills and flows through Kansas in a southeasterly direction, eventually emptying into the Arkansas river in eastern Oklahoma. The river drains 5,793 square miles (ca. 9,321 square kilometers), flowing more than 300 river miles (ca. 483 km) in Kansas alone. Prior to the impoundment of John Redmond reservoir, the Neosho followed a meandering course through the project area, swinging back and forth across a flood plain ranging from two to five miles (ca. 3-8 km) wide. The channel gradient through this area was shallow, dropping an average of about one and a half to two feet per mile, or around 46 to 61 cm every kilometer and a half (Kansas Water Resources Board 1961). Seasonal flooding was common due to these conditions. Within the project area, the main tributaries of the Neosho are Plum, Troublesome, Lebo, Benedict, Kennedy, and Hickory creeks, which enter from the north, and Eagle, and Otter creeks, which enter from the south (see Figure 2).

The reservoir area, as does the entire state, enjoys a continental climate characterized by warm summers with abundant sunshine, cold dry winters, strong wind movement, and wide variations in temperature and precipitation (Flora 1948). Average annual rainfall for the reservoir area is 37.25 inches (ca. 95 cm), with the least rainfall occurring in December and the maximum falling in May. The extremes of temperature occur in January and July, with an average low of 30.7° F and a high of 79.5° F. The last frost in spring usually occurs about April 17, and the first frost in fall about October 21, limiting the growing season to around 186 days (Flora 1948). Winds are generally out of the north-northwest from November to March, and out of the south and south-southeast from April to October.

The flora of the region in the prehistoric and early historic periods can be ascertained by reference to soil survey data and early historical accounts. In both cases, the picture obtained is one of open prairie penetrated by thin ribbons of riparian forest. Kuchler (1974) lists the Osage Cuestas as part of the Tall grass prairies, and describes it more specifically as an area with extensive interspersion of forest and prairie. Wedel has described the regional vegetational pattern in somewhat more detail, as follows:

In their original state, the Osage Plains were primarily a tall grass prairie, with big bluestem dominating the rolling plains between streams and much of the valley bottoms as well. The immediate stream banks and adjacent valley floors were heavily timbered with oak, black walnut, elm, linden, sycamore, locust, hickory,

pecan, and other hardwoods. Smaller forms that undoubtedly entered into the native economy of the Indians included Osage orange or bois d'arc, persimmon, papaw, elderberry, serviceberry, chokecherry, and wild grape (Wedel 1959:14).

Soil survey data for Coffey and Lyon counties remains unpublished at the time of the writing of this report, but copies of the soil survey maps of the reservoir area, provided by the Soil Conservation Service extension offices of the two counties, made it possible to ascertain the nature and the distribution of the various soils in the area. Descriptions of the native vegetation under which these soils developed were obtained from published data relating to identical soils encountered in adjacent Anderson and Woodson counties (Sallee 1977, and Swanson and Googins 1975, respectively). The data clearly indicate that within the project area, trees were confined to the bottomland and flood plains of the Neosho river and its tributaries. Forestation was apparently not pervasive even in those locations, since the Anderson county soil survey report describes the Verdigris, Osage, and Lanton soil types, the common stream course soils in the project area, as developing under a native vegetation of both tall grasses and hardwood trees (Sallee 1977:12-20). The Mason soil type, moreover, found on benches and terraces of major streams, is listed as having developed under tall prairie grasses only (Sallee 1977:14).

The inferences derived from soil data are borne out by early historical accounts of the region. Francis Parkman, traveling across the northern edge of the Osage Cuestas in 1846, observed that "The whole...country was a succession of green prairies, rising in broad swells and relieved by trees clustering like an oasis around some spring, or following the course of a stream along some fertile hollow" (Leonard 1910:344). In an undated collection of letters written to and compiled by John Redmond, the editor of the *Burlington Daily Republican*, early Coffey county settlers recalled that the country was "...wide open..." in the 1860s and 1870s, with prairie grass "...as tall as your head" (Redmond:33, 55). Nor did the forested areas escape notice: John Rosenquist's land, on the left bank of the Neosho just south of present-day Neosho Rapids, was said to be "...rich in walnut and oak timber" (Godsey 1925:453), and many of the early settlers later reminisced with delight, in their letters to John Redmond, about the wild plums, grapes, blackberries, raspberries, and strawberries that they found growing in abundance along the stream courses.

Faunal resources of various kinds were supported by these vegetational conditions. Wedel, speaking of the Osage Plains in general, states that:

...The forested belts and nearby prairies provided shelter and food for an abundant mammalian fauna, chief among which were elk, white-tailed and mule deer, black bear, cougar, wildcat, timber wolf, gray and red fox, raccoon, opossum, the gray, fox, and flying squirrels, beaver, otter, muskrat, and cottontail rabbit. On the prairies were bison, coyote, antelope, jackrabbit, badger, and many smaller mammals. Among the numerous birds, the plentiful wild turkey was doubtless of primary importance to man; but prairie chicken, ruffed grouse, and quail were also useful, and the passenger pigeon and Carolina parakeet were present. The larger streams, usually running clear and unsilted, yielded an abundance of edible fish and shellfish (Wedel 1959:14).

Wedel points out elsewhere that Kansas occupies a transitional zone climatically intermediate between the humid East and arid West, and has for that reason long been subject to climatic fluctuation of greater or lesser magnitude (1959:7). At the same time, it is clear that the grasslands are not a recent development; in fact, the present evidence indicates that the vegetative and faunal characteristics of the Kansas landscape "...long antedate man's demonstrable presence on the scene" (Wedel 1959:8). Buried soils indicate the presence of grassland in Kansas throughout the Pleistocene, and molluscan fossils point to a climatic control much like the present since mid-Wisconsin times (Wedel 1959:8). In short, it can be assumed that human occupation of the John Redmond reservoir area took place in an environmental setting much the same as that seen today.

III. THE CULTURAL-HISTORICAL SETTING

Judging from existing evidence, it is clear that the John Redmond reservoir area has been occupied intermittently, if not continuously, since the end of the Pleistocene some 12,000 years ago. Unfortunately, the record is fragmentary and incomplete, being based on rather minimal evidence quite often found in secondary rather than primary archeological context. To adequately describe the nature of the various cultural groups which have inhabited the project area, it has therefore been necessary to consider archeological data and interpretations gleaned from throughout the Plains, focusing, whenever possible, on the eastern Kansas region.

For the larger perspective, the following account draws on such basic works as Jennings's *Prehistory of North America* (1968), Wedel's *Prehistoric Man on the Great Plains* (1961), and the latter's *An Introduction to Kansas Archeology* (1959). Fortunately, the onslaught of reservoir projects in the years following World War II has enabled the assembling of a relatively large body of archeological data concerning eastern Kansas. The major eastern Kansas reservoirs (see Figure 1) for which published archeological reports are available include Big Hill (Rowlison 1977), Council Grove (Witty 1961a, 1962a, 1964b), El Dorado (Eoff and Johnson 1968, Grosser 1973), Elk City (Marshall 1972), Marion (Witty 1963a), Melvern (Wilmeth 1959, Moore and Birkby 1962, Reynolds 1975), Milford (Witty 1963b, Muller and Schock 1964, Sperry 1965), Perry (Reynolds 1979), Pomona (Wilmeth 1970), Toronto (Howard 1964), and Tuttle Creek (Solecki 1953, Cumming 1958, Johnson 1973, Schmits 1976) reservoirs, and the proposed Cedar Point (Wood 1977) reservoir, as well as John Redmond reservoir (see Chapter IV).

PRECERAMIC CULTURES

The Paleo-Indian Tradition

The earliest known inhabitants of the Plains, and the ones about which the least is known, are referred to collectively as Paleo-Indian. The antiquity of the Paleo-Indian tradition is a matter of debate, but the majority of the reliable radiocarbon dates fall between 9,500 and 5,000 B.C. (Jennings 1968:71). Since most of the known Paleo-Indian sites are kill sites or butchering sites containing the remains of mammoth, mastodon, or bison, the tradition is often referred to as the Big Game Hunting tradition. It is assumed that the hunting of small animals and the gathering of plant foods were also important aspects of the Paleo-Indian subsistence economy, but there is little tangible evidence to support this assumption. Likewise, it is assumed that small

bands or family units comprised the basic mode of social integration. The domesticated dog was associated with at least some of these groups, as evidenced by dog remains excavated from Paleo-Indian context in Idaho, radiocarbon dated at "...over 11,500 years" old (Butler 1968:39).

Paleo-Indian sites are primarily identified by the presence of large, lanceolate-shaped projectile points, including such types as Scottsbluff, Eden, Angostura, and Plainview, and the fluted Clovis and Folsom. It is thought that these points were used on spears or darts, the former being thrown or thrust by hand, the latter projected by means of an atlatl, or throwing stick. It has also been suggested that these points were actually multifunctional tools, used not only as projectile points but for a variety of cutting, scraping, and piercing tasks.

Paleo-Indian sites have been found at several locations in the Plains, particularly the Western Plains and the adjacent Southwest, but in Kansas, no significant Paleo-Indian sites warranting excavation are known to be present. Surface finds of fluted and/or lanceolate projectile points of Paleo-Indian type, however, have been reported from various locations in the state, primarily by private collectors.

At John Redmond reservoir, three fluted points of Paleo-Indian type were reportedly found by a private collector at one site, 14CF335. These points include one "...of the Folsom type...," another which "...resembles a Clovis point...," and one apparently resharpened point with "...a constricted waist like some fluted points from the Eastern United States" (Rogers 1979:6). Another fluted point, similar to the last of the three just mentioned, was reportedly found by a local resident on a bluff just south of the reservoir area (Rogers 1979:6). While these surface finds are of rather minimal archeological value due to the circumstances of their discovery and their lack of primary context, they clearly demonstrate that Paleo-Indian groups were in the vicinity of the John Redmond reservoir area, at least to some degree.

The Archaic Tradition

Climatic fluctuations associated with the end of the Pleistocene glaciation are thought to have been influential in bringing about various changes and the development of the next distinctive preceramic cultural tradition, the Archaic, which began as early as 8,000 B.C. in some areas of the Plains and continued, at least in Kansas, until the beginning of the Christian era. The climatic changes saw the extinction of the large Pleistocene fauna and the development of a drier, warmer climate, a climate somewhat hotter and more arid at the outset than that experienced today.

A seasonally shifting subsistence-settlement system, more regionally oriented and hence less nomadic than the Paleo-Indian mode of exploitation, apparently constituted the Archaic way of life. Archaic groups continued to be hunters, but the fauna they hunted consisted of the modern forms of bison, elk, and deer. A reliance on plant foods, particularly grains and other seeds, is suggested by the appearance of stone grinding slabs during this time period. It is possible, in fact, that such plants as the sunflower and marsh elder were cultivated by Archaic groups (Yarnell 1976:266).

The Archaic artifact inventory differed from that of the Paleo-Indian in several ways. Ground-stone items, such as axes, celts, gorgets, and beads, made their appearance in the Archaic along with the grinding slabs previously mentioned. Chipped-stone axes and celts were also produced. Projectile points continued to be made of chipped stone, but more diversified forms were manufactured. Archaic points retained the lanceolate shape but not the fluting of Paleo-Indian points, and were often either stemmed, or notched on the side, corner, or base. And while many of the Archaic projectile point types were as large as those of the earlier time period, a significant number were smaller, displaying the trend towards diminutiveness which continued into the late prehistoric, almost certainly reflecting the gradual move towards the use of the bow and arrow (Fenenga 1953).

The Archaic tradition is a great deal better represented than the Paleo-Indian, with several distinct cultural manifestations having been identified. The earliest radiocarbon dates reported in Kansas are ca. 6,285 B.P., or 4,335 B.C., from a charcoal lens at the stratified Coffey site in Tuttle Creek reservoir (Schmits 1976:25), and ca. 5,500 B.P., or 3,600 B.C., from a hearth in the lower levels of 14LT319, a site in Big Hill reservoir (Rowlison 1977:118). Unfortunately, neither the charcoal lens nor the hearth were accompanied by diagnostic artifacts, although a biface fragment was recovered from the charcoal lens at the Coffey site.

The Munkers Creek phase (Witty 1969:2) is of much the same antiquity, having yielded a date of 3,390 B.C. (Witty 1964b:5) from the William Young site at Council Grove reservoir in the Flint Hills, only some 45 miles (ca. 72 km) or so upstream on the Neosho from John Redmond reservoir. Even more interestingly, the Archaic zone at the site yielded what are among the oldest ceramics on the plains: two small triangular-shaped effigy heads, one with "...a long arched nose and shallow incising suggesting hair or other decoration across the forehead, sides and back...," the other bearing "...a series of small punctates on the front, sides and an encircling line around the top" (Witty 1962b:5, Figure 2).

Diagnostic Munkers Creek artifacts, including some very distinctive chipped-stone knives (see Witty 1962b: Figure 1,E) which often display a high gloss or polish, have been found all along the eastern edge of the Flint Hills.

The lower levels of Unit III at the stratified Coffey site in Tuttle Creek reservoir are of similar age. Radiocarbon dates from Horizons III-5, III-7, and III-8, which are interpreted as representing a single cultural complex, indicate that the site was used as a temporary camp site at least three separate times during a hundred-year period beginning around 5,270 B.P. (Schmits 1976:17, 79). Munkers Creek knives, Clear Fork gouges, and lanceolate projectile points of the Nebo Hill and Sedalia types were present in these horizons along with grinding slabs and several hearths. Ceramic evidence of exceptional antiquity was also encountered here, as at the William Young site. The evidence consisted of one fired clay bead, which was recovered from Horizon III-5, dated at ca. 5,163 B.P. (Schmits 1976:72).

In the southern portion of the Flint Hills, middle and late Archaic manifestations have been identified at the El Dorado reservoir. A date of 6,000 B.C. has been inferred for the middle Archaic Chelsea phase, which has produced short, squat projectile points comparable with those of the Logan Creek and Simonson complexes of eastern Nebraska and western Iowa (c.f. McKusick 1964:56-65). The earlier of the two late Archaic manifestations has been termed the El Dorado phase, with radiocarbon dates of 1,700 B.C. and 1,960 B.C. being obtained at the Snyder site (Grosser 1973:234). Projectile points of the El Dorado phase are similar to the Lamoka and Table Rock types (c.f. Ritchie 1969:50, and Perino 1968:96, respectively). Structural evidence, in the form of grass-impressed daub, postmolds, and mud-dauber's nests, was encountered in the El Dorado phase level of the Snyder site (Grosser 1973:233). The site also contained material assigned to a later Archaic manifestation termed the Walnut phase, which yielded a radiocarbon date of 20 B.C. but is thought to have begun around 1,200 B.C. Projectile points of this phase are predominately small, triangular, and corner notched, although larger corner-notched points were also present (Grosser 1973:230-233).

Much closer to the John Redmond area, two apparently late Archaic sites have been investigated by KSHS archeologists in the upper Verdigris watershed, Greenwood and Lyon counties. While no artifacts were recovered at either site, charcoal from deeply buried hearths yielded radiocarbon dates of ca. 1,830 B.C. at 14LY305 and 1,300 B.C. at 14GR307 (Calabrese 1967:12-13).

At John Redmond reservoir, a late Archaic manifestation termed the Eagle Creek complex has been identified and excavated at the

stratified Williamson site, 14CF330. The Archaic component at the site yielded radiocarbon dates of 1,550 B.C. and 1,650 B.C., along with two adult female burials and a dog burial, and burned stone concentrations interpreted as representing hearths and/or boiling-stone dump areas (Witty 1963c:8, 1973:5). The projectile points, like those found in the El Dorado phase component at the Snyder site, are quite similar to the Lamoka and Table Rock types previously mentioned. It is intriguing to note that an apparently older component was located under the excavated Archaic level at the Williamson site. Unfortunately, it could not be investigated due to the impoundment of the reservoir and the consequent flooding of the area.

CERAMIC CULTURES

The Archaic tradition, as currently understood, came to an end on the Plains around the beginning of the Christian era, apparently the result of the diffusion of new technologies, ecological adaptations and probably social systems, from the Eastern Woodlands. Pottery making is the most archeologically obvious of the technological advances, for this reason and others, post-Archaic cultural manifestations have come to be grouped together under the classificatory term of Ceramic cultures (Champe 1946). The gradual acceptance of the bow and arrow comprises another major technological change occurring in the Ceramic period. In terms of subsistence-settlement systems, the introduction of cultigens and the development of agriculture during the Ceramic period became important factors in influencing how and where people lived.

The Early Ceramic Period

In Kansas, the beginning of the Early Ceramic involved actual migrations of people as well as the diffusion of ideas from the Eastern Woodlands. The earliest and certainly the best known of these migrations is represented by settlements centered in the Kansas City area and known archeologically as Kansas City Hopewell. According to Wedel, Kansas City Hopewell is "Probably the most advanced and complex of the Woodland manifestations in the Kansas region..." (1959:542), although "...clearly a watered-down version..." (1961:89) of the Middle Woodland Hopewell cultures of Illinois and Ohio from which it derived. It is of particular interest in that it represents the first evidence, on the edge of the Plains, of a people whose subsistence rested in part on the cultivation of domestic crops; corn and beans having been recovered from the excavations at the Renner site in present-day Kansas City, Missouri (Wedel 1943:26).

Although centered in the Kansas City area, Kansas City Hopewell remains have also been found to the west in scattered village sites

and burial mound sites, primarily along the Kansas river drainage. The recently excavated Ashland Bottoms site near Manhattan, for example, has been identified as Kansas City Hopewell on the basis of pottery and other artifacts found at the site (O'Brien 1979:18). Few sites out of the Kansas City area, however, have been specifically identified as Kansas City Hopewell.

In the John Redmond area, sherds with Kansas City Hopewell characteristics have been recovered at the Gilligan site, 14CF332, and the Arrowhead Island site, 14CF343. At the latter site, a relatively large ceramic figurine, depicting a human figure from the waist up, was also found and identified as Kansas City Hopewell. It is uncertain, however, whether the material derives from actual occupation by Kansas City Hopewell groups, or from trade or some other kind of contact with such groups.

Middle Woodland Hopewellian influences of the Eastern Woodlands are also apparent in southeast Kansas at sites taxonomically identified as the Cuesta phase (Marshall 1972). Cuesta phase sites, known primarily from the Verdigris, Fall and Elk river drainages, consist of both complex, nucleated villages and scattered, extended villages. Houses were oval or round in shape, and were probably covered by a fabric or material lighter than earth or sod, judging from the widely spaced and deeply set postmolds and the lack of any evidence of daub reported from these sites. Cuesta phase ceramics are clay tempered, making them easily differentiated from the grit-tempered Kansas City Hopewell pottery. Stylistically, Cuesta phase sites have yielded distinctive Havana pottery ware as well as sherds with later Hopewellian motifs, suggesting a somewhat later temporal positioning for the phase than for Kansas City Hopewell. The only available radiocarbon dates, ca. A.D. 780 and A.D. 970, from the Infinity site, 14MY305 (Marshall 1972:230), tend to corroborate this inference.

While Kansas City Hopewell and Cuesta phase peoples were obviously strongly influenced by and even directly connected with the "classic" Hopewell and Havana traditions of the Eastern Woodlands, the situation is somewhat different with the other Early Ceramic cultural manifestations in Kansas. Somewhat simpler technologically, and more regionally oriented, these manifestations are taxonomically attributed to a broad taxonomic unit called the Plains Woodland. Several subdivisions of Plains Woodland have been defined for the Central Plains, but since differing taxonomic approaches were employed, the complexes so defined are not necessarily of the same magnitude (Reynolds 1979:85). In Kansas, at least three distinct subdivisions of Plains Woodland are currently recognized: Keith focus, Grasshopper Falls phase, and Greenwood phase.

In terms of spatial distribution, Keith focus sites are located predominately in western Kansas (and Nebraska), Grasshopper Falls

phase in northeastern Kansas along the Delaware river, and Greenwood phase in east central Kansas, mainly in the Flint Hills and Osage Cuestas south of the Kansas river. Temporally, Plains Woodland cultures probably date towards the latter half of the first millennium A.D. (Reynolds 1979:99-102), although this conclusion is somewhat tentative due to the paucity of radiocarbon dates, some of the available ones of which appear to be unreliable. At any rate, it has been clear for some time that there was temporal overlap, as well as cultural diffusion, between Kansas City Hopewell and the Plains Woodland complexes (Wedel 1959:554-556).

Of the Early Ceramic cultures so far discussed, Greenwood phase is the most relevant to the present study, since the John Redmond reservoir is located more or less in the center of the Greenwood phase spatial distribution as it is currently known. The phase has been identified by means of four type sites: the Curry site, on the upper Verdigris river; the Two Dog site, in the Council Grove area; the Cow Killer site, near Melvern reservoir; and the Gilligan site, in John Redmond reservoir. Excavations at these sites recovered a distinctive pottery ware tempered with crushed, burned limestone along with limited amounts of indurated clay and/or shale. At the Curry site, a cemetery area yielded the remains of 10 young children and one adult, buried in flexed and semiflexed positions, with mortuary goods. Marine shell beads as well as others manufactured from fossil shell were found in association with these burials. Three radiocarbon dates are available for Greenwood phase: A.D. 380 ± 230 , from the Curry site; A.D. 550 ± 250 , from the Gilligan site; and A.D. 1045 ± 115 , from the Two Dog site.

The Early Ceramic period was characterized by a variety of structural and artifactual elements, of which burial mounds, or stone-filled tumuli, are perhaps the most dramatic. Burial mounds are usually found on prominent bluff tops overlooking major stream valleys, primarily in the northeast part of the state. They were apparently inspired by the chambered mounds to the east, since the definition of the chamber becomes less distinct as one moves west. The mounds usually contain secondary and/or cremated remains of several individuals often accompanied by a small number of artifacts. Unfortunately, most of the mounds in Kansas, as elsewhere, have been either partially or wholly destroyed by relic hunters.

Other structural evidence found at Early Ceramic sites includes house remains. The Cuesta phase evidence has already been mentioned; similar widely spaced posthole patterns have been reported at Greenwood phase sites, and especially at Grasshopper Falls phase sites. For the latter two phases, the construction of houses that were at least partially covered with clay daub plastered

over thatched grass is indicated by the archeological recovery of grass-impressed fired-clay daub.

The Early Ceramic artifact inventory includes ceramics along with tools and ornaments made of stone, bone, and shell. The pottery vessels are medium to large in size, with conoidal bases and relatively straight sides. Middle Woodland, Hopewellian vessels exhibit smoothed surfaces and are often decorated by cross hatching and/or zoned dentate and rocker stamping, usually confined to the rim and upper body of the vessel. Plains Woodland vessels are typically plain, wide-mouthed jars, with cord-roughened exterior surfaces, although the Greenwood phase Verdigris ware also includes smoothed surfaces. Chipped stone artifacts of the Early Ceramic include a remarkably large variety of forms and sizes. Small, so-called "bird points" are present, very likely representing the use of the bow and arrow, but larger projectile points are more common. In general, Early Ceramic projectile points are triangular or somewhat ovate, with expanding, straight, or contracting stems formed by notching at or adjacent to the corners of the points. Also present are large to medium-sized, ovate to triangular, thin, plain, or stemmed bifaces used probably as cutting tools, i.e., knives; as well as thicker ovate or triangular pieces used for chopping, i.e., celts. Drills and scrapers, in a variety of shapes and sizes, are also found. The ground stone inventory includes grinding slabs and mullers, full and three-quarter grooved axes, ornaments such as gorgets, and such paraphernalia as smoking pipes. Bone tools, utensils, and ornaments were also made, along with shell ornaments, pendants, and disc beads.

Technological advances and cultural diffusion occurring in the Early Ceramic period are thought to have resulted in significant changes in social relationships and subsistence-settlement patterns. One thing is clear, at any rate: a sizable expansion in population took place, evidenced by an increase in both the number and the size of archeological sites. Of the total number of recorded sites within the state in the files of the Historical Society for which some cultural identification has been made, the Middle Woodland and/or Plains Woodland sites outnumber almost two to one any other single major cultural unit. The density of material at many of these sites indicates that they were occupied over longer periods of time than in the Archaic, perhaps reflecting a move towards sedentariness associated with agricultural practices. Very little direct evidence of Early Ceramic agriculture has been found in Kansas, however. Cultigens--corn and possibly sunflower--have been recovered from a pit in a Cuesta phase house floor at 14LT304, a site in the proposed Big Hill reservoir in southeast Kansas (Rowlison 1977:42), and corn and beans have been reported from excavations at the Kansas City Hopewell, Renner site in present-day Kansas City, Missouri (Wedel 1943:26). Nevertheless, the

predominance at Plains Woodland sites of hunting, butchering, and hideworking tools, butchered animal bone, and grinding stones, together with the general lack of direct evidence of agricultural tools or produce, suggests that hunting and gathering comprised the basic subsistence economy. Agriculture, if present, was apparently of minimal importance.

The Middle Ceramic Period

By approximately A.D. 1000, cumulative changes in technological and adaptational patterns had resulted in new cultural groupings and lifeways identified archeologically as the Middle Ceramic period. The era is also referred to as the Plains Farmer period, due to the archeologically documented presence of domesticated plants such as corn, beans, and squash, and tools associated with horticulture. Middle Ceramic cultural complexes relevant to the John Redmond area include the Pomona focus (Witty 1967) and the Central Plains Tradition, the latter made up of the Smoky Hill aspect (Wedel 1959:535, 563-566), the Upper Republican phase, and the Nebraska phase (Brown 1966:294-301).

In Kansas, the Central Plains tradition is spatially confined for the most part to the Kansas and Missouri river drainages in the northern part of the state. Nebraska phase is concentrated in the extreme northeastern part of Kansas, Smoky Hill aspect in north central Kansas, and Upper Republican in western Kansas. Temporally, radiocarbon dates ranging from A.D. 1138 to 1458 have been reported (Wedel 1961:100).

Highly characteristic of Central Plains tradition are remains of substantial earth-covered dwellings of frame construction, usually square to rectangular in floor plan, with long, covered entrance passages. Supported by four or more widely set primary posts and containing a centrally located hearth, the earth lodges in the eastern portion of the region commonly stood in and over deep pits, with the floor from two to five feet (ca. 60-150 cm) below ground. In the west, such pits were usually shallower or entirely lacking. The houses were commonly distributed in what has been termed a rural hamlet pattern consisting of single houses, randomly scattered from a few yards to several hundred feet apart, or of clusters of two to four lodges similarly separated from other small clusters or single units. Larger settlements are represented by the Smoky Hill aspect, Minneapolis site, which represents an earth lodge village of some 24 houses (Witty 1978:57). Little or no evidence of settlement planning is apparent for the Central Plains tradition groups, lodges being strung out irregularly along the tops of ridges, bluffs, and terraces, close to creek bottoms and ravines where horticultural activities apparently took place.

Adjacent to but identified as culturally distinct from the Central Plains tradition is the Pomona focus (Witty 1967, 1978: 59-64). That complex has a more obvious relevance to the present study, since the majority of known Pomona sites are concentrated in the east central portion of the state, primarily in the Osage Cuestas and eastern Flint Hills but north of the Kansas river as well. Pomona sites seem to fill the "gap" in the northern part of the state between the Nebraska phase sites along the Missouri river and the Smoky Hill aspect sites which begin in the Vermillion and Blue river drainages as one moves east. Temporally, Pomona focus radiocarbon dates range from A.D. 1000 to 1600 (Witty 1967:4, 1978:62).

A major determinant of Pomona focus are the remains of one or more structures which had been covered with thatch and plastered over with clay. Relatively light weight structures, roughly oval in shape and usually about 25 feet long (ca. 7.6 m) and 15 feet wide (ca. 4.6 m), are indicated by widely spaced and irregularly located postmolds. Major portions of these structures were plastered over with clay, judging from the abundance of grass-impressed and pole-impressed fired-clay daub found at these sites. The causal factor involved in the firing of the daub is uncertain, although prairie fires are an obvious possibility. Wilmeth asserted that "Definitely there must have been repeated use of fire fairly close to the center of the house to account for the baking of the roof covering in this area" (1970:25). Features identified as interior hearths, however, are usually lacking in Pomona houses (Witty 1967:2, 1978:60). In terms of settlement pattern, "...extended community relationships..." are indicated, with single or paired houses, occasionally even up to four houses, situated along low terraces or on natural levees on the valley floor from a few hundred yards (ca. 200-300 m) to almost a mile (ca. 1.6 km) apart (Witty 1978:60). This basic settlement pattern is augmented, in both Pomona focus and Central Plains tradition, by small, thin camp sites located on the flood plain as well as on ridge tops overlooking the valleys, apparently representing temporary camps associated with food-gathering activities or specialized work areas.

Several Pomona focus sites have been reported, and some excavated, in John Redmond reservoir. Excavations at the now-inundated Dead Hickory site, 14CF301, revealed the presence of four lodge floors, evidenced by posthole patterns, storage pits, and abundant fired-clay daub (Witty 1963c:8, Schmits 1980c:133-162). The house remains and associated artifacts indicated the site to be a small extended village site of the Pomona focus. Witty reports (1973:2) that during the excavation of the Dead Hickory site, located near the former mouth of Hickory creek, a contractor was busy bulldozing trees and brush to the north. Judging from the artifactual material exposed, it was obvious that other Pomona sites

were being destroyed. Those sites, when considered along with the series of known Pomona sites extending to the north and west along the Neosho, illustrate that the area was heavily used by Pomona peoples, living in a rather concentrated version of their extended-village settlement pattern.

In addition to the camp and village sites, Middle Ceramic burial sites have also been investigated. At the Whiteford site near Salina, for example, a cemetery complex containing the flexed and extended inhumations of some 140 individuals has been found associated with an extended community of the Smoky Hill aspect. Among the burials were a number of artifacts of pottery, stone, shell, and bone, including one pottery sherd which suggests the importation of pottery from Caddoan peoples located some 250 to 300 miles (ca. 400-480 km) to the southeast (Wedel 1959:519). A smaller Pomona focus cemetery complex was identified at the Wiley site in Melvern reservoir. This complex consisted of 15 flexed burials, often with limestone slabs laid over the top of the grave pits. Mortuary goods were also present with the burials (Moore and Birkby 1964:18-24).

The ceramic inventory of the Middle Ceramic cultural complexes consists of small to large-sized globular-shaped jars with all-over cord roughening. Rims are generally straight or out-flaring in form, although a significant number of thickened or channeled collared types were made. Vessels usually have well-defined necks and prominent shoulders. Decoration is either lacking or minimal, consisting of the tool-impressed notched lips occasionally found on Pomona and Smoky Hill pottery, or the pinching around the lower edge of the collar seen on some Smoky Hill vessels. Tempering material also varies. Indurated clay and/or sand was employed by Central Plains tradition potters, while indurated clay, weathered shale particles, possibly crushed sherds, or, occasionally, crushed bone were used by the manufacturers of Pomona vessels.

The Middle Ceramic tool inventory includes both chipped-stone and ground-stone artifacts. Small, thin, triangular projectile points with single or double side notches and occasionally single basal notches are quite common, although significant numbers of larger corner-notched and stemmed points are found as well at Pomona focus sites. Knife forms are generally triangular, although the diamond-shaped, alternately beveled knife is fairly common. Celts are usually chipped, but occasionally exhibit minor grinding. Grinding slabs and mullers, and loaf-shaped, grooved arrowshaft smoothers comprise the ground-stone tool inventory. Very few bone or shell artifacts have been reported for Pomona focus, probably reflecting the low potential, due to climate and soil composition, for preservation of faunal remains in eastern Kansas. However, at least one bison scapula hoe has been found (Rohn, Stein, and Glover 1977:88), at the Winn site, a Pomona habitation site on Wolf creek

east of Burlington in central Coffey county. And at the Smoky Hill aspect Minneapolis site in north central Kansas, excavation of three earth lodge floors produced numerous bone tools, including beamers, fleshers, rib-shaft wrenches, awls, bison horn-core scoops, deer mandible graters, a variety of digging tools made from bison scapulae, scapula hoes, "cleavers" or spatula-like forms, an anteriorly slotted dorsal spine of a bison modified apparently for use with a stone blade as a spokeshave-like tool, bone arm bands, and numerous examples of socketed digging-stick tips made from bison tibia (Witty 1978:57-58).

The cultural and taxonomic relationships of Pomona focus with the apparently contemporaneous Central Plains tradition and the earlier Plains Woodland cultures remains uncertain. The Pomona projectile-point inventory, for example, is clearly Middle Ceramic in its predominance of small, thin, triangular points, but a definite, albeit muted, Early Ceramic affinity is reflected in the presence of smaller numbers of stemmed and corner-notched points. In terms of ceramics, Pomona pottery vessels exhibit Middle Ceramic morphological characteristics. Excavations at the Curry site, however, revealed Greenwood type sherds, now recognized as Pomona ware, occurring stratigraphically together with Verdigris type sherds of the Plains Woodland Greenwood phase (Calabrese 1967:75).

Spatial and temporal relationships are equally interesting. In terms of spatial distribution, Pomona focus is distinctly different from Central Plains tradition, centering instead along and within the general territorial boundaries of the earlier Grasshopper Falls, Greenwood, and Cuesta phases. In the northern part of the state, Pomona sites appear to extend northward between the Central Plains tradition Nebraska phase sites, along the Missouri river, and the most easterly Smoky Hill aspect sites, in the Vermillion and Blue river drainages. Temporally, the available Pomona focus dates suggest a significant overlap between the Early Ceramic and Middle Ceramic periods.

The current interpretation of the situation is that Pomona focus represents an indigenous population adapting from Plains Woodland technologies into a Middle Ceramic, Plains Farmer life style. Witty, for example, postulates that the Pomona focus represents "...a late survival of...Plains Woodland folks," representing, therefore, a "...late Plains Woodland manifestation with some shared traits from the adjacent Central Plains peoples" (1978:62). Or, as Marshall has put it, using a taxonomic framework developed for the eastern Woodlands, the Pomona focus can be considered a "...Late Woodland complex..." occupying "...a spatial position between and temporally concurrent with the "...Central Plains and Mississippian complexes" (1972:242-243).

The Middle Ceramic cultures were apparently ended, or at least transformed, by a series of severe droughts which occurred around A.D. 1500. It is thought that most, if not all, of the Central Plains groups migrated northward into Nebraska and South Dakota and settled along the Missouri river, becoming in time part of the Coalescent tradition (Lehmer 1954). Several large village sites of this tradition contain ceramic and lithic artifacts, and house remains, attributable to Central Plains tradition peoples (Wedel 1961:182-183). The circular earth lodges of the Coalescent tradition, for example, differ from the earlier long-rectangular lodges of the region "...in virtually every particular," displaying "...a floor plan basically like that in...Central Plains lodges..." (Wedel 1961:182).

The Late Ceramic Period

Although the Central Plains region was apparently largely abandoned at the end of the Middle Ceramic, several distinct cultural manifestations were present during the period which followed, known archeologically as the Late Ceramic or Proto-historic. The Late Ceramic represents a time just prior to, during, and after the initial contact with the first Europeans. For this reason, protohistoric sites might contain items of European derivation even though the site may not have actually been visited or recorded by Europeans. The Protohistoric is important in being the first period for which recorded history can be used to identify artifact assemblages and archeological manifestations with historic tribal groups.

Along the Platte river in Nebraska, for example, are found sites of the Lower Loup focus, which have been identified historically as settlements of the Pawnee tribe, an earth-lodge-dwelling people. The Republican band of the Pawnee are associated historically with at least one identified earth lodge site in north central Kansas. In extreme northeastern Kansas and southeastern Nebraska, sites attributable to the Oneota aspect are found, likely representing the remains of such Siouan-speaking peoples as the Kansa tribe. Oneota sites are distinctive due to the presence of shell-tempered ceramics. In western Kansas and Nebraska, the Dismal River aspect has been identified as protohistoric Plains Apache. Sites of the Dismal River aspect are clearly Plains Indian in character, but often contain artifacts of Puebloan manufacture, indicating trade contacts with the Puebloan Indians of the Southwest. In central Kansas, more relevant to the present study, sites of the Great Bend aspect have been identified as settlements of protohistoric Wichita bands. These peoples built large, dome-shaped houses covered with thatched grass, and have been identified as the "Quivira" peoples sought by Coronado. Artifacts associated with the Great Bend aspect have

been found in the Toronto reservoir area, approximately 35 miles (ca. 56 km) south of John Redmond reservoir (Howard 1964:366-368), and the "Neodesha Fort" site near Neodesha in southeastern Kansas has been tentatively interpreted as the location of a protohistoric Wichita village marking probably the easternmost extent of the Wichita (Wedel 1959:526-534).

The protohistoric subsistence-settlement pattern was apparently much the same but probably of far greater efficiency than that of the preceding period. Surplus is implied by more numerous and larger storage pits. Horticultural activities centered on the familiar corn-beans-squash triad, while the gathering of wild foods continued to be of importance. Bison hunting was actively engaged in by means of two annual, seasonal hunts, which often involved most of a group's population. Portable structures such as tipis were utilized on the hunts.

The protohistoric settlement pattern thus included temporary bison-hunt camp sites as well as large, compact villages with semipermanent lodges, auxiliary structures, specialized activity areas, and extensive storage pits. Protohistoric peoples in the far west, however, such as the Dismal River/Plains Apache, were much more involved in hunting than horticulture, and consequently left fewer remains of a sedentary nature. Archeological traits characteristic of the Late Ceramic period include small, plain, triangular projectile points, pottery vessels whose surface treatment consists of smoothing and/or simple stamping, and a variety of bone tools including bison scapula hoes, adze-shaped scraper handles made from elk antler, scored ribs, and arrow-shaft straighteners made from bison ribs. Towards the end of the Late Ceramic, however, the quality of the artifacts declined sharply, as European-manufactured goods came into use.

HISTORIC INDIAN CULTURES

The Historic period begins, in Kansas, in A.D. 1541 with Coronado's journey to the "Quivira" villages, identified archeologically as Great Bend aspect and culturally as protohistoric Wichita. These villages were reportedly located just beyond the big bend of the Arkansas river, and are currently believed to be in the vicinity of Lyons and Lindsborg, where scraps of chain mail, as well as datable Puebloan pottery sherds, have been found in Great Bend aspect sites (Wedel 1959:319-320). Interestingly, the accounts of one of the later Spanish expeditions indicate that facial tattooing and painting were quite common among the "Quivirans;" in fact, the Puebloan Indians called them the painted or tattooed Indians (Wedel 1959:22).

By the early 1700s, the Wichitas had apparently abandoned their territory and moved far to the south, in Oklahoma and Texas. Historical documents hint at the Neosho river drainage being an important part of

the Wichita habitat as late as the eighteenth century, but according to Wedel, in view of the bitter warfare waged against the Wichita all through that century by the Osage, the Neosho river in Kansas would seem to have been a most undesirable locality for permanent Wichita towns, certainly by the latter part of the century (1959:67). In point of fact, in central Kansas, between the Comanche of the short grass plains and the prairie-dwelling Kansa, no village sites of the mid-eighteenth century have yet been definitely identified (Wedel 1959:636). Recent historical research, however, indicates that the Padouca, or Plains Apache, were living near Lyons in 1724, when they were visited by a Frenchman, Etienne de Bourgmond (Reichart 1978:41).

Following the withdrawal of the Wichita, eastern and central Kansas was apparently used primarily by the Kansa and Osage. By 1792, the Kansa had abandoned their old habitat along the Missouri river and moved west, resettling in north central or northeastern Kansas along the Kansas river, where they were visited by a Frenchman, Pedro Vial (Wedel 1959:36-37). The Osage, who were formerly of western and southwestern Missouri and claimed lands in Missouri, Arkansas, and Oklahoma as well as a large part of southeastern Kansas, had been forced out of Missouri by the early 1820s, resettling along the lower Verdigris river in northeastern Oklahoma and along the Neosho in present-day Neosho and Labette counties of southeastern Kansas. Both the Kansa and the Osage used the Flint Hills region as a hunting ground.

In 1825, the reservation era began in Kansas with the signing of treaties between the United States government and the Kansa and Osage. The treaties sharply restricted the territorial limits of the two tribes, confining the Kansa to a 30-mile-wide (ca. 48 km) reservation extending along the Kansas river, and the Osage to a 50-mile-wide (ca. 80 km), 75-mile-long (ca. 120 km) strip of land along the Neosho and Verdigris rivers in southeastern Kansas. Later, in 1846, the Kansa were moved to a smaller reservation near Council Grove. The Osage were able to hold their land on the Neosho until 1865, congregating thereafter in their villages along the Verdigris. Both tribes were finally removed to Oklahoma in 1872 and 1873.

With the introduction of the reservation system in 1825 and the opening up of vast tracts of land in Kansas, it became possible for the Federal government to press forward with its plan for the resettlement of the eastern Indian tribes. Throughout the next two decades, therefore, several tribal groups, mostly from east of the Mississippi, were moved to Kansas and resettled on reservations in the eastern third of the state. The tribes involved in the resettlement program included the Shawnee, Delaware, Ottawa, Kickapoo, Quapaw, Chippewa, Sac and Fox, Pottawatomie, Munsee, Miami, Wyandot, Peoria, Kaskaskia, Wea, Piankeshaw, and the "New York Indians" (Abel 1904).

The John Redmond reservoir area was not included within the boundaries of any of the reservations, but the Sac and Fox reservation was located only a very short distance to the north, along the headwaters of the Marais des Cygnes river. It was first occupied in 1846. A Sac and Fox trail leading out to the southern buffalo-hunting grounds crossed the Neosho river in the area where the town of Burlington is now located (Andreas 1883:646). The Pottawatomie reservation was located not far to the east of John Redmond, but was only occupied from 1837 to 1847. The Osage reservation was located some distance to the south, with the bulk of the population concentrated even further south along the Kansas-Oklahoma border.

The immigrant tribes were primarily horticulturalists, adapted to a Woodland-oriented way of life. In Kansas, several of these groups became quite proficient in bison hunting, and some attained notable stature in Plains-style warfare with indigenous tribes of the western Plains. Many of the immigrants, however, were civilized in the manner of the better-known Cherokee, maintaining well-kept Euro-American-style farmsteads complete with log cabins, fenced fields, and domestic animals. One Euro-American, passing through a Sac settlement in 1846, observed that "Their farms had a thrifty appearance" (quoted in Barry 1972:579). Francis Parkman, traveling through the Shawnee reservation in the fall of 1846 on his way to Westport, present-day Kansas City, described the scene in more idyllic terms:

It was a beautiful alternation of fertile plains and groves just tinged with the hues of autumn, while close beneath them nestled the loghouses of the Indian farmers. Every field and meadow bespoke the exuberant fertility of the soil. The maize stood rustling in the wind, ripe and dry, its shining yellow ears thrust out between the gaping husks. Squashes and huge yellow pumpkins lay basking in the sun in the midst of their brown and shrivelled leaves. Robins and black-birds flew about the fences, and everything betokened our near approach to home and civilization (Leonard 1910:345).

Unfortunately for the Indians, public sentiment and government policy came about full swing by the late 1860s, and despite all the assurances given them in the 1830s and 1840s, the immigrant tribes were once again forced to move, this time to "Indian territory" in present-day Oklahoma. Except for remnants of the Pottawatomie, Kickapoo, Iowa, and Sac and Fox tribes, whose descendants remain in Kansas to the present day, removal of the immigrant tribes and what remained of the by-then demoralized and disease-stricken native tribes was accomplished in the 1870s.

EURO-AMERICAN SETTLEMENT

The earliest known historical accounts dealing with Kansas are those of the Coronado expedition of A.D. 1541. Coronado visited several "Quivira" settlements, now identified as Great Bend aspect or protohistoric Wichita, in central Kansas just beyond the big bend of the Arkansas.

Other accounts reveal that Father Juan de Padilla returned to the same area a year later to convert the natives to Christianity, only to lose his life in the process.

A half century then elapsed before Europeans again returned to the area, this time in the form of an unauthorized expedition led by Bonilla and Humana in 1593 or 1594. Very little is known of this expedition; quarrels between the leaders resulted in the murder of Bonilla, and the entire command, with the exception of its Indian guide, was thereafter destroyed by Indians. Another Spanish expedition followed in 1601. This group, led by Onate, visited several "Quivira" settlements in south central Kansas, including one very large village, or "Gran Poblacion."

Following Onate's return, no further Spanish explorations took place for another half century, and then they were largely confined to western Kansas. Puebloan Indians on several occasions between 1664 and 1706 fled into the Plains and established themselves among the Apache at "El Cuartelejo," in Scott county, western Kansas, and at least two Spanish forces were sent out to retrieve those individuals. Two military expeditions further investigated the western Kansas region in 1719 and 1720.

Following the early Spanish exploratory expeditions from the Southwest, the French entered the area from the East, by way of the Great Lakes and the Mississippi valley. Relatively few written accounts are available, and according to Wedel (1959:26), the earliest French documents concerning the Kansas region are vague and generalized, making it uncertain just when the westward penetration began and how extensive it was. Spanish documents, however, indicate that French adventurers and traders were likely among the Plains tribes for some time before the arrival of the French explorers whose travels were recorded in documents now extant.

Claude Charles du Tisne is one of the first of the French explorers about whom such information is available. In 1719, du Tisne ascended the Missouri and Osage river to the Osage villages in Missouri, obtained horses, and proceeded southwestward into southeastern Kansas and northeastern Oklahoma. His goal was to

visit and trade with the Padouca, or Plains Apache, and set up a safe trade route to the Spanish settlements in New Mexico. He was prevented from meeting the Padouca by the Wichitas, who, although friendly enough to du Tisne, were mortal enemies of the Plains Apache and wanted no benefits given them.

Five years later, in 1724, an expedition led by Etienne de Bourgmond managed to reach the Padouca, who were by this time located somewhere in central Kansas, probably in the vicinity of Lyons (Reichart 1978:41). Bourgmond's journey took him through the Flint Hills, passing through Council Grove and crossing the upper Neosho and Cottonwood rivers. The journal of the Bourgmond expedition records that, just before reaching Council Grove:

We have seen today, from all sides, more than thirty herds of buffaloes and cows; they are so numerous that it is impossible to count them, it appears that there are four or five hundred at least within each. We saw herds of deer near the same...Continual prairies, bunches of timber the length of the Brooks and within the valleys (Margry 1886:430).

Several other expeditions of lesser importance, sent out both by the French and the Spanish, are known or are thought to have taken place at various times in the eighteenth century. The situation changed drastically in 1803, however, with the consummation of the Louisiana Purchase and the transfer of the vast Louisiana territory to the United States. From that time on, exploration of the central Plains was much more systematic and much better recorded, with Americans acting as the primary participants.

Zebulon Pike led one of the first of the American expeditions to travel through the interior of Kansas. His 1806 journey took him across southeastern Kansas and through the Flint Hills region, crossing the Neosho, Verdigris, and Cottonwood rivers and their headwaters. One of his camps was supposedly made on Eagle creek, within the limits of John Redmond reservoir (Coues 1895:II, 399). On the Cottonwood river above present-day Cottonwood Falls, about 35 miles (ca. 56 km) west of John Redmond, Pike stood on a hill and "...in one view below me saw buffalo, elk, deer, cabrie [antelope], and panthers" (quoted by Wedel 1959:39).

Later on the same expedition, Pike's lieutenant, James Wilkinson, after leaving Pike and marching eastward from the Arkansas river for a week, came to a region--probably somewhere in the southern Flint Hills--where "...the herds of buffalo, elk,

goat [antelope], and deer, surpassed credibility. I so solemnly assert, that if I saw one I saw more than nine thousand buffaloes during the day's march." (quoted by Barry 1972:57).

Several other American exploratory expeditions followed. In 1811, Major George C. Sibley led a group on a two-month excursion through south central Nebraska and central and western Kansas, visiting Pawnee, Kansa, and Osage villages and hunting camps. In 1819 and 1820, Major Stephen H. Long's expedition to the Rocky Mountains crossed Kansas, proceeding westward along the Kansas river and returning by way of the Arkansas river drainage and the southern Plains. Maps produced by the Long expedition referred to the High Plains of western Kansas, Oklahoma, and Texas as the Great American Desert, an appellation which tended to diminish Euro-American interest in that area, at least momentarily.

By the early 1800s, a small but growing number of Euro-Americans had settled in the region, primarily in eastern Kansas. Most were hunters, trappers, or traders. The Santa Fe Trail, surveyed in 1825-1827, attracted numerous individuals. The situation was considerably affected, however, by the institution of the reservation system in 1825 and the subsequent arrival of immigrant tribes from the east. These tribes were guaranteed their lands in perpetuity; nevertheless, Euro-American encroachment upon tribal lands and resources was a constant and increasing problem over the years. White "squatters," who simply settled on Indian lands and refused to leave, were a major problem. In 1860, for example, the situation was so bad on the Osage reservation that Federal troops were sent in to remove the squatters, destroying their cabins, fences, crops and livestock in an attempt to ensure that they would not return. Traders often caused much the same problem, while exploiting the Indians in other ways as well, as is revealed in the following excerpt from an 1847 speech by a Sac chief:

We came here last spring...with the intention to remain in this country; in a short time the traders commenced pouring in, and destroying all of our timber and making large fields; we supposed that they would only build trading and other houses for themselves to live in...Their accounts and papers follow us all around, and we never get done paying them; it's pay all the time and never scratch out. There are most as many whites as Indians at the trading houses (quoted in Barry 1972:579).

In point of fact, it may well be that "...the very coming of the red man induced the coming of the white," as Abel has asserted (1904:87). The establishment of military posts to

provide protection for the immigrant tribes, for example, brought soldiers to Kansas, and, concomitantly, civilians in support capacities. With the establishment of a semblance of law and order, the region became even more attractive to Euro-Americans, thus virtually ensuring an increase in white settlement. The immigrant tribes also attracted a number of white educators and missionaries, as well as numerous traders, the latter acting either as government agents or private entrepreneurs. And a not insignificant number of Euro-Americans came out of genuine personal involvement--arriving with the immigrant Miamis, for instance, were Miami women with white husbands, and some white women with Miami husbands (Barry 1972:655).

Other events also conspired to bring Euro-Americans to Kansas. Trade with New Mexico was highly profitable, making the Santa Fe Trail one of the most important and heavily used trade routes of the pre-Civil War era. The war with Mexico, the California gold rush, and the Mormon exodus caused the trail to be used even more, enabling thousands of Euro-Americans to gain an acquaintance with the many potentials of the region. It is small wonder, then, that steps were taken, by means of treaties and congressional actions beginning in the 1850s, to remove the Indian from Kansas. By the early 1870s, this goal had essentially been realized, enabling Euro-American settlement of the entire state. Legally, Kansas attained territorial status in 1854, and statehood in 1861.

According to Andreas (1883:646, 845), no white settlers are known to have been in either Lyon or Coffey counties prior to 1854. The first real influx of settlers occurred in 1855, with another sizable influx in 1857. In March, 1855, Dr. Hamilton Smith became the first to settle in the present-day John Redmond reservoir area. After spending a month near the mouth of Eagle creek, he resettled near what is now the town of Ottumwa, and was joined shortly thereafter by at least six others. At about the same time, a Mr. Crall settled on Lebo creek, and John Rosenquist settled on the Neosho river south of present-day Neosho Rapids, the town site of which was laid out later that same year. The population of the general area increased steadily in the years to come, especially in the two decades following the Civil War.

By 1863, demands for academic opportunity and cultural enlightenment had resulted in the founding of a school of higher learning, the Western Christian University, housed in a two-story limestone building located on "College Hill" in Ottumwa. Construction of the building actually involved two separate phases of development. The university had originally been conceived as a Methodist institution and the building partially erected when, as the result of a particularly successful Christian church revival

meeting, the Methodists involved converted to the Christian church and transferred ownership of the university to that church. Then, "...as they didn't want to build on a Methodist foundation..." a local resident later recalled, "...the walls were torn down and the foundation again laid" (Redmond, undated compilation, pg. 64). The university was in operation from 1863 to 1867, during which time "...the school earned an excellent reputation for thoroughness and dispatch, and was well patronized from all parts of the state" (Andreas 1883:660). The university closed in 1868 due to financial embarrassments, and in 1871 the building was destroyed by fire, allegedly the result of arson.

One other item of historic relevance bears mention in this account: an unnamed post-Civil War cattle trail, used by the Juvenal brothers. The trail, which originated in Austin, Texas, and terminated in Russell, Kansas, in part paralleled the Neosho river and was apparently a favored route either because of the dependable source of water or simply because of habit (Urban 1973). Subsequent cultivation of the land has apparently obliterated the traces of the trail.

IV. PREVIOUS ARCHEOLOGICAL INVESTIGATIONS

The John Redmond reservoir area first received serious archeological attention in 1953, when a short survey of the proposed Strawn reservoir area was conducted by E.H. Moorman as a part of the River Basin Surveys program of the National Park Service. Although the Strawn reservoir project was subsequently discontinued, Moorman's survey resulted in the reporting of seven prehistoric archeological sites (Moorman 1953), all in or immediately upstream of the John Redmond area. Unfortunately, the sites were afforded inadequate and sometimes conflicting documentation, resulting in a lack of certainty concerning their exact locations. In some cases, later investigators found several distinct and separate sites in the site areas reported by Moorman. For this reason, Moorman's site designations can be regarded as superseded by those reported from later surveys.

In the late 1950s, following the abandonment of the Strawn reservoir project, planning and construction of John Redmond reservoir began. Since the latter project took in more land than that dealt with by Moorman in 1953, an additional archeological survey was authorized by the National Park Service. This survey was conducted by KSHS archeologists Roscoe Wilmeth and Thomas A. Witty, Jr. in 1959 and 1960, with Wilmeth conducting most of the survey and testing and Witty completing the field work and preparing the report. Thirty-six prehistoric sites were located and reported, nine of which were tested during the course of the survey (Witty 1961b). Testing was very limited in nature, being confined for the most part to the excavation of small test pits, although at one site, a 52-foot-long (ca. 16 m) trench was dug into the side of a ditch running through the area. No more than seven test pits, usually less, were dug at each of the other eight tested sites. On the basis of these investigations, it was recommended that further testing be conducted at 13 sites, and extensive excavations be undertaken at 10 other sites (Witty 1961b:37).

As a result of these recommendations, and despite delays by the National Park Service in awarding the work contract, the Kansas State Historical Society carried out the first intensive archeological investigations in the John Redmond area during June and July of 1963 (Witty 1980, 1963c). The fieldwork, which consisted almost entirely of excavation, was performed by a 10-man crew directed by Society archeologist Thomas A. Witty, Jr. Four sites, 14CF301, 14CF330, 14CF331 and 14CF332, were partially to extensively excavated during the 1963 field season. Additional excavation work was planned for the following summer at 14CF330

and five of the other high-priority sites recommended in 1961, but the reservoir waters were impounded before the work could be undertaken. All of these six sites are now either completely or partially inundated.

The four sites excavated in 1963 were found to be representative of cultures spanning some 2,500 years from 1,500 B.C. to approximately A.D. 1100 (Witty 1973:1). Of the four sites, two were particularly rewarding: the Dead Hickory site, 14CF301, and the Williamson site, 14CF330. At the Dead Hickory site, the remains of four houses were found. The house remains, along with the artifacts found at the site, indicated that 14CF301 was a small extended village attributable to the Pomona focus, a cultural manifestation of the Middle Ceramic time period (Witty 1973:2, Schmits 1980c:161-162). The Williamson site, by contrast, was a multiple component site with at least four vertically stratified habitation zones (Witty 1973:5, 1963c:7-8, Schmits 1980a). The upper three zones were identified as representing, from top to bottom, the Middle or Late Ceramic, Early Ceramic, and Archaic time periods. Charcoal samples from the Archaic zone yielded dates of ca. 1,500 B.C. and ca. 1,650 B.C. (Witty 1964a:7, Schmits 1980a:23). The fourth and lowest zone was represented by hearths exposed in the cut bank next to Eagle creek. These deeper levels were to be investigated in the '64 season, but unfortunately, due to the impoundment of the reservoir and the consequent inundation of the lower limits of the site, the work had to be deferred. The site has since been listed in the National Register of Historic Places.

No further archeological work was done at John Redmond reservoir until 1974. At that time, the Museum of Anthropology of the University of Kansas, under contract with the National Park Service, conducted a shoreline survey of the reservoir and intensively tested one prehistoric site, 14CF335 (Rogers 1979). The work was carried out by a small crew directed by Richard A. Rogers. Funding enabled 40 days of work; half of this time was spent on survey, the other half on the testing of 14CF335.

The original purpose of the 1974 survey was to assess the extent of damage to known sites as the result of wave action, agricultural practices, and other such activity. It soon became evident, however, that a significant number of unreported sites were present within the reservoir area, and on this basis a decision was made to concentrate survey activities on the locating of new sites rather than the assessment of damage to old sites. As a result, 37 new sites were reported during the course of the survey. One of these sites, 14CF16, was tested by means of a 1 m² test pit taken to a depth of 60 cm below surface, with negative results.

The University of Kansas research effort concentrated quite heavily on the testing of 14CF335. This site had previously been tested during the course of the 1959-1960 KSHS survey, and at that time it was concluded that the site had been obliterated by cultivation. Ceramics recovered from the site indicated it to be representative of one of the ceramic complexes. The extensive testing of the site by the University of Kansas crew was apparently prompted by the fact that three fluted projectile points were reported by a private collector to have been found at the site (Rogers 1979:6). The three points correspond morphologically to the Folsom and Clovis projectile point types of the Paleo-Indian time period, ca. 8,000 to 10,000 B.C. (c.f. Bell 1958:16 and 26).

The site was extensively tested in 1974 by means of fifteen 2 m² excavation units and a series of discontinuous trenches (Rogers 1979: Figure 22). The 15 excavation units were located in both the cultivated and the forested portions of the site, and were hand shoveled to depths of up to 80 cm below ground surface. The trenches, located entirely within the cultivated portion of the site, were excavated by backhoe to a depth of seven feet (ca. 2.1 m). Judging from Rogers's map (1979: Figure 22), approximately 115 linear meters of trench were excavated.

Unfortunately, the results of the excavations were almost totally negative. In the cultivated portion of the site, neither the trenches nor the excavation units produced any cultural evidence below the plow zone. In the forested portion of the site, the excavations produced a few artifacts, but no features or buried cultural levels were encountered. A biface fragment, recovered from 57 cm below ground surface, was the most deeply buried tool found at the site, while five Middle Ceramic pottery sherds were located at depths ranging from 23 to 39.5 cm below ground surface. In brief, no significant buried cultural manifestations were discovered. It was concluded that cultivation had destroyed all primary context and thoroughly mixed the cultural material of the various components of the site, except in a small portion of the forested area.

Following the 1974 investigations, no further federally funded work was done at the reservoir until 1979, that work being the subject of the present report. In 1975, however, the Kansas State Historical Society again entered the scene in response to reports concerning a specific site, 14CF343, the Arrowhead Island site. Virtually no information has yet been published regarding the site; for that reason it will be discussed in some detail in the present paper. The following account was drawn entirely from miscellaneous field notes and correspondence in the KSHS files.

In May of 1975, Tom Witty, the Kansas State Archeologist, was visited by a private collector who brought with him a number of artifacts collected from an undocumented site on a small island in John Redmond reservoir. The island was reportedly known locally as Arrowhead Island. The artifacts, subsequently donated to the Society, consisted of a ceramic figurine, a restorable pottery vessel, several chipped-stone projectile points and miscellaneous chipped-stone tools and debitage. The material bore some distinctive traits of the Kansas City Hopewell aspect of the Early Ceramic period.

The presence of this material at John Redmond was naturally quite interesting in terms of regional settlement patterns and culture history. As has been mentioned in a previous section, Kansas City Hopewell is thought to represent the result of a westward movement or migration of Middle Woodland peoples from the Eastern Woodlands around A.D. 1. Kansas City Hopewell was "...probably the most advanced and complex of the Woodland manifestations of the Kansas region" (Wedel 1959:542), and is thought to have exerted a significant influence on the indigenous groups of the region.

Consequently, Witty visited the island later in the month. Finding several more projectile point sections and Hopewellian sherds, as well as some Pomona sherds, he designated the site 14CF343, the Arrowhead Island site. His inspection also revealed that the site was being rapidly eroded by wave action. Noting the continuing destruction occurring to the site from erosion and collectors, Witty recommended shortly thereafter, in a letter to the U.S. Army Engineer District, Tulsa, that tests be carried out to determine whether buried cultural horizons were present at the site and that efforts be made to stop the removal of artifactual material from the site by collectors. The island was subsequently posted in an attempt to stop the vandalism.

A year later, in 1976, Witty received a visit from another collector, who related that he had recently obtained some unusual pottery from a site in John Redmond reservoir. From his description, it was apparent that the pottery was Hopewellian, and that the site was 14CF343. The collector also reported that the water level of the reservoir had dropped by several feet (ca. 1-3 m), exposing several stone hearths located at the water's edge.

Witty notified the management agency of the continuing vandalism and visited the site a week later, accompanied by the reservoir resident engineer and an archeologist from the U.S. Army Engineer District, Tulsa. The three found that an extensive area of land had been exposed by the drop in water level. Several rock concentrations, apparently hearths, were observable in the exposed and eroded

area. In one spot five hearth complexes were present, spaced 3-5 m apart and lying in a straight line. Artifacts were found in and around the hearths and all along the former shoreline, which had been heavily eroded by wave action. An apparently excavated and backfilled area 3-4 m in diameter, assumedly dug by a private collector, was also found near the five hearth complexes.

During the course of the visit, Witty dug two small test pits at the site, one located along the former shoreline and the other in the center of the island. The shoreline pit exposed burned sandstone rocks descending to a depth of ca. 30 cm. In the other pit a dark humic zone, lacking cultural material, was encountered under 20-25 cm of recently laid silt.

Leaving the site, the group visited with a local collector who had reported finding material on the island, and found that his collection from the site included several Hopewellian sherds and a number of large corner-notched and unnotched projectile points. While the points were for the most part typical of what would be expected from an Early Ceramic Woodland site, one rather exceptional artifact was also observed--a large, fluted projectile point base, apparently the base of a Clovis projectile point.

Since no funding was available for testing of the site, no further excavations were carried out. The site was briefly inspected again by Witty in 1978. At that time the water level in the reservoir was extremely low, and more of the site was observable than had previously been the case. Numerous sherds and sandstone rocks were exposed over an area which extended some 180-275 m away from the old shoreline that was noted when the site was first visited. A great deal of erosion was apparent, and the site was covered with footprints, probably the result of numerous collecting forays.

The "crisis" situation represented by the Arrowhead Island site was emphasized by Witty during the precontract negotiations that resulted in the 1979 fieldwork with which this report is concerned. In the KSHS research design, it was proposed that large-scale excavations be carried out at the site by the volunteer amateur archeologists enrolled in the Kansas Archeological Training Program (Witty 1979:2). Unfortunately, the water level of the reservoir during the summer was so high as to preclude survey of the site, let alone excavation. The site remains in a crisis situation.

V. RESEARCH METHODOLOGY

The research design employed throughout the 1979 field season was essentially that proposed during precontract negotiations by Thomas A. Witty, Jr., Kansas State Archeologist. This plan was fourfold: to reexamine previously reported sites; to locate and report new sites; to test for surviving subsurface features at the more potentially significant sites; and to utilize the labor resources of the Kansas Archeological Training Program as a supplement to the activities of the project crew (Witty 1979:1-3).

Initially, several of the known sites in the project area were visited. This activity served the purpose of acquainting the present writer and his foreman with the project area, and sometimes led to the discovery of nearby, previously unreported sites. The primary goal, however, was to recover material and data which had become exposed since the sites were last visited. This was particularly important since many of the sites had previously yielded only nondiagnostic artifacts and were therefore incompletely identified. A secondary goal of this activity was to ascertain the presence and extent of any natural or project-caused alteration to the sites since they had been originally recorded. Several sites along the shoreline of the conservation pool, for example, had been severely eroded by wave action, while other sites had been adversely affected by modern cultivation practices. Several of the old sites were inundated by reservoir waters and could not, of course, be visited at all.

The second phase of the research consisted of an intensive survey aimed at locating and documenting as many previously unidentified sites as possible in the project area. Methodologically, this was essentially an inductive strategy designed to provide the management agency with a more comprehensive data base. Archeologically, the survey was intended to contribute further to our understanding of the nature and relative intensity of prehistoric manifestations in the area. Additional survey activity seemed particularly appropriate in view of the fact that previous surveys were somewhat limited in scope and basically selectively conducted (Witty 1979:1).

Generally speaking, sites were located by means of a pedestrian reconnaissance, with the crew walking systematically back and forth across a field or pasture, inspecting the surface for artifacts and other cultural evidence. Subsurface testing, or so-called "shovel-assisted-survey," was not employed in the locating of sites, although several newly located sites were later tested. Using terminology advanced recently by King (1978), the 1979 survey could best be described as a controlled-exclusive comprehensive survey. Since it was apparent that time and funding would not allow for complete coverage of the entire project area, priority was given to areas of considered high

archeological potential which were readily accessible and had good surfacing conditions, and to areas scheduled to receive adverse impact from road or building construction.

Archeological potential was inferred from consultation with local collectors, who pointed out locations where artifacts had been found in the past, and from background research involving an examination of environmental, historical, and archeological data pertinent to the project area. Generally, there was no problem with accessibility to the potential site areas. The project area is government owned and operated, thus negating the need in most cases to obtain permission from land-owners, and the road system in and around the project area is fairly extensive and well maintained. Heavy rains and flooding, however, several times during the summer closed off main roads and forced a retreat to higher ground for periods of a week or longer.

Vegetational cover was the main factor determining whether an area could be satisfactorily surveyed. Four major vegetational situations were encountered during the 1979 field season: plowed fields, pasture or brushy areas, eroded shoreline areas, and areas disturbed by various kinds of construction activity. Plowed fields provided the optimal situation for site survey. Fortunately, much of the project area, mainly in the river and creek bottomlands, was under row-crop cultivation involving spring-planted corn and soybeans. Several fields were planted in winter wheat, however, and could not be inspected because of the density and advanced maturity of the plants at the time of the survey.

Surfacing conditions in brushy areas, on the other hand, were quite variable. Most of these areas are former cropland or pasture-land now lying fallow as part of the Wildlife Refuge land-use program. Some of the fields had become so grown over with grass, weeds, brush, and small trees that the ground surface could virtually not be seen, while in others the vegetation was naturally sparse or had been burned off, and large portions of the ground surface were open to view.

Conditions for collecting exposed materials from the surface at eroded shoreline areas along the edge of the conservation pool varied according to the local topography. Some shoreline areas with very little slope, as, for example, in the Neosho river bottomland along the western edge of the conservation pool, were covered by thick layers of silt, driftwood, and debris. Under these conditions, survey was essentially a waste of time. Shoreline areas with prominent slopes, however, such as are found along the edge of the uplands in the lower reservoir where the reservoir

is deepest, were much more productive. These areas had been scoured by wave action, resulting in removal of the top soil and the consequent exposure of formerly buried artifacts. Yet even in the latter areas, unfortunately, silt and driftwood deposition was an occasional problem.

Surfacing conditions were equally variable in areas disturbed by construction or other activity. In many cases, roadwork exposed archeological material which otherwise could not have been found due to vegetational cover. Many of the roads had been graveled, however, thus limiting survey to the road edges and ditches.

The third aspect of the 1979 investigation consisted of testing for subsurface cultural manifestations. Testing was accomplished in three ways: by the taking of soil core probes with an Oakfield soil sampling tool; by the excavation of small, scattered test pits; and by the excavation of 2 m^2 excavation units. The Oakfield soil sampling tool is a simple, hand-operated, probe-type apparatus which can remove intact a soil core one inch (ca. 2.54 cm) in diameter and one foot (ca. 30.48 cm) long. The tool can be used to extract samples to depths of several feet (ca. 1 m) below the ground surface. During the 1979 field season, coring of this type was used to obtain an initial appraisal of subsurface site conditions. Soil probes were placed both systematically, every 20-40 paces across the apparent extent of a site, and specifically, in and around rock and daub concentrations. When coring results indicated that cultural manifestations were apparently present in primary archeological context below the plow zone, testing escalated to the excavation of small test pits, systematically located in a loose grid pattern across the site. These pits were usually 60 cm^2 in size, but in some cases, their horizontal dimensions were altered (narrowed) so as to avoid crop damage. Test pits were usually excavated to a depth of 45 cm below the ground surface, unless cultural material extended deeper, in which case excavation continued until sterile soil was reached. Excavation was accomplished by means of shoveling, with troweling often being employed when material was encountered below the plow zone. Testing of this sort was designed to ascertain the density and extent of subsurface cultural manifestations, and to locate buried features. On the few occasions when features were located, the small test pits were usually expanded into 2 m^2 excavation units. These units had several advantages: they facilitated mapping, both within the unit and within the site, they usually encompassed the feature being investigated, and they were large enough to work in easily.

Sites were chosen for testing on the basis of inferential conclusions concerning the research potential or scientific significance of each site as indicated by their respective surface remains. A basically inductive approach was employed, the main goal being to identify sites with undisturbed subsurface deposits

meriting more extensive investigation and/or preservation. The main criteria for testing, therefore, was the presence of surficial archeological materials indicative of buried features or cultural zones. Using this criteria, testing priority was given to sites on which were found burned limestone, assumedly from hearths, grass-impressed fired-clay daub, from daub-covered habitational structures, and/or bone or shell fragments, which are usually not present unless recently exposed, or preserved by charring. The "richness" of a site's artifact inventory was not considered to be an overriding factor, since sites yielding small numbers of artifacts may simply be more deeply buried than "rich" sites which may have been extensively disturbed and, in effect, destroyed, by cultivation or some other activity.

Other criteria considered in choosing sites for testing were surface indications of exceptional antiquity and cultural uniqueness. None of the John Redmond sites, however, appeared at the time of the survey to be exceptionally old, i.e., of Paleo-Indian or early Archaic cultural affiliation. Cultural uniqueness was apparent at one site, 14CF343, the Arrowhead Island site, which yielded material indicative of Kansas City Hopewell affiliation or influence; unfortunately, the site remained almost entirely inundated throughout the field season and could not be investigated.

It should be emphasized that the testing did not always follow the "ideal" pattern just outlined: logistical considerations and other factors also affected the plan of procedure. For example, some sites with apparently good potential were not tested because of flooding, or simply because of a lack of time during the field season. On the other hand, occasionally sites with little or no indication of subsurface remains were tested on a more or less ad hoc basis simply because of their proximity to a high-potential tested site. With all the equipment in the field and near but not at the end of a work day, it was both logically and pragmatically logical to spend an hour or so to check out a nearby seemingly unpromising but possibly buried site.

The use of Kansas Archeological Training Program enrollees as a supplementary work force comprised the fourth aspect of the research design. Sponsored by the Kansas State Historical Society in cooperation with the state amateur archeologist's organization, the Kansas Anthropological Association (K.A.A.), the program is oriented toward training and research, providing professional training for the amateur and a competent and willing work force for archeological investigations. Many of the amateurs enrolled in the program have been involved in Society archeology for some 10 to 15 years. Over the last four years the group has met annually for two weeks in the summer, participating in formal digs or surveys supervised by Society archeologists. This year, primarily because

of the perceived need for salvage excavations at the Arrowhead Island site, the group convened at John Redmond. Unfortunately, no work could be done at that site due to the high water level of the reservoir. Nevertheless, the group met as scheduled from 2 June to 17 June. During this 16-day period, approximately 11 full work-days were completed, four days being lost due to rain. With an overall average of 35 people working each day, approximately 3,080 man-hours of labor were contributed.

The training program basically involved the K.A.A. members in three kinds of fieldwork designed to enhance and expand the efforts of the project crew: excavation, site survey, and laboratory processing. Extensive test excavations were conducted at two sites discovered earlier in the summer by the project crew, and at one site discovered by a K.A.A. survey crew immediately outside the boundaries of the project area. Site survey efforts were directed towards the investigation of previously reported sites and the discovery and reporting of new sites, including those on privately owned lands located closely adjacent to the project area, lands which would likely be affected by any future enlargement of the reservoir or by construction of access roads, pipelines, and other such improvements connected with further development of the reservoir. Laboratory processing and preliminary analysis aimed at and resulted in rapid and almost concurrent processing of specimens recovered from the field. In brief, the training program provided an invaluable supplement to the activities carried on by the project crew.

VI. SITE REPORTS

In the following sections of this chapter, the results of the archeological fieldwork undertaken in the summer of 1979 under the direction of the writer and the principal investigator are described. Two general subjects are dealt with, newly discovered sites designated by the present writer and by Society archeologists working as part of the Kansas Archeological Training Program, and previously recorded sites reinvestigated by the writer and the regular crew.

Each site report is meant to be a definitive presentation. The newly designated sites are described in terms of their legal and environmental location, the nature of the archeological investigation, the artifact inventory recovered from the site, and the impact of past and present land use. On the basis of this data, conclusions are presented concerning the type of site represented by the remains, the cultural affiliation and/or temporal position of the former occupants, and the significance of the site. The previously recorded sites which were investigated, having been described by earlier investigators, are discussed primarily in terms of their recently recovered artifact inventories and the discrepancies, where observed, between the new data and the previous archeological understanding of the site.

The site reports include inferential conclusions as to the significance of each site. Two types of significance were discerned, historical and scientific, although questions of ethnic, public, and legal significance as described by Schiffer and Gunneman (1977:244-246) were also considered. In part following criteria advanced by Scoville, Gordon, and Anderson (1972:19-20), archeological sites were regarded as historically significant if they were associated with a specific notable event or aspect of history. One site, 14CF1302, the Ottumwa College site, was thus considered to be significant in a local historical sense, since it represents the first educational institution of higher learning in the area, an institution with a rather interesting, albeit brief, history (see Section III, Cultural-Historical Setting).

Sites were considered to have scientific significance if it seemed likely that their further study would result in archeologically significant information, defined as data which would contribute to our understanding of prehistoric and/or early historic cultural manifestations in the area. In other words, the scientific significance of a site was measured according to its research or investigative potential, i.e., its apparent capacity to provide archeologically significant information. Investigative potential was mainly discerned on the basis of the preservation, condition, and extent of the intact archeological deposit, as determined by subsurface

testing and/or the presence of various surfacial indicators. Sites which contained substantial undisturbed buried remains were thus considered to be significant sites, since investigation of such remains could produce data concerning subsistence activities, architectural practices, intra-site settlement patterns, culture-historical relationships, and other such questions, thereby providing archeologically significant information unobtainable at sites disturbed by plowing, erosion, vandalism, etc.

The analysis and description of the sites and their remains involved a variety of sometimes arbitrary methodological procedures. For example, the prehistoric components of the newly designated sites have been defined as either habitation sites or camp sites, a distinction based on the presence or absence, respectively, of structural remains, specifically grass-impressed fired-clay daub. No prehistoric kill sites, quarry sites, burial sites, or mounds were encountered in the investigation. The habitation/camp site dichotomy is not meant to imply that habitation sites were occupied more extensively or over a longer period of time than camp sites, although in many cases this would seem likely. Rather, the terms are used to indicate that evidence for a habitational structure was present or absent at a site.

Historic components have been defined for sites at which one or more historic artifacts were found, even though the materials may have been secondarily deposited by means of a manure spreader or some other incidental agency. To clarify the nature of such components, historical research was undertaken to determine whether the sites with historic components are situated on or near the location of early Euro-American farmsteads and/or stores. In all such cases, the information is presented in the site report. The primary sources consulted were Godsey's (1925) account of the settlement of the Neosho Rapids area and the Edwards Brothers' (1878) plat map of Coffey county.

The prehistoric artifact analyses are generally divided into three major categories: ceramics, including burned earth and daub as well as pottery sherds; lithic artifacts, including both chipped and ground stone; and other materials, including such things as unworked hematite fragments and faunal remains, including molluscan remains, which could not always be associated with certainty to the prehistoric components.

The ceramic analyses in most cases follow Wheeler's (1952) checklist of features and descriptive terms. The presence of limestone, bone, and/or hell tempering was checked, whenever suspected, with the use of muriatic acid and comparison with sherds of like temper. Microscopic examination was also employed. Cord impressions produced by cord roughening were investigated by means of positive clay impressions. The cords used in producing

the impressions--not, it should be emphasized, the cord impressions themselves--are described as either "S-twist" or "Z-twist," using Rohn's terminology (1971:114). Cord size, or diameter, is described somewhat arbitrarily as fine, medium, or large gauge, with medium-gauge cord defined as being from 2-3.5 mm in diameter.

The lithic analyses focused on a number of attributes, primarily concerning the source material and the morphological characteristics of the artifacts. For the projectile points, typological affinities are also provided, with Bell (1958, 1960) and Perino (1968) being the primary sources consulted.

Two kinds of chert, or chert sources, were identifiable, at least for the primary and secondary decortication artifacts. The two include chert with limestone cortex, quarried or collected from Permian or Pennsylvanian geological formations, and "field chert." The latter is a somewhat colloquial term used to describe the ubiquitous river-rolled or otherwise heavily weathered chert cobbles and gravels originally derived primarily from the Permian beds of the Flint Hills, and since deposited throughout eastern Kansas in both upland and bottomland locations by ancient and recent alluvial action. Within the reservoir area, field chert comprises the most plentiful and readily available source of raw material for chipped-stone industry. Field chert is chiefly characterized by the presence of a thin, dense, rind-like, usually caramel-colored cortex. The cobbles are almost always smooth surfaced and well rounded.

Heat treatment, or, more properly, the thermal pretreatment of chert, is another attribute that has been noted whenever observed during the lithic analysis. The results and identifying characteristics of such treatment have been investigated and described in detail by several authorities (e.g., Collins and Fenwick 1974, Mandeville 1973, and Mandeville and Flenniken 1974). Heat treatment is known to enhance the workability of chert, causing it to become less brittle and more elastic, allowing much greater control of the flaking. Heat treatment can be determined with absolute certainty only by means of lithologic microscopic analysis, but the results of heat treatment are usually visible, at least in part, to the naked eye. The two major macroscopic characteristics are a change in the color of the chert, usually to a distinctive pinkish or reddish coloration, and the creation of a greasy luster. Accordingly, all chert artifacts exhibiting these characteristics were recorded in the analysis as appearing to have been heat treated.

The lithic artifact categories employed in the present report are based on morphological and functional considerations common to archeological reports from throughout the Prairie-Plains, and are intended to facilitate higher-level comparative analyses. The

ground stone categories--pipes, abraders, mullers--should cause no confusion for most readers. Chipped stone categories, however, often vary with the analyst, and will for that reason be described, as follows:

1. Projectile points. This category includes artifacts which are bifacially flaked, relatively thin in cross section, and comparatively small, symmetrical, and pointed in shape. These artifacts were produced in fairly standardized forms, a fact which facilitates typological identification by the archeologist. They were usually notched or stemmed for hafting, although plain triangular forms were also common. Projectile points were used as piercing implements, serving primarily as tips for arrows, darts, and spears.
2. Preforms. This term is primarily used to refer to projectile points in an intermediate, semifinished state of manufacture (Montet-White 1968:31). The term is often applied, and is within the present report, to any bifacially or unifacially flaked tool which has evidently not been completed or fully finished.
3. Knives. This category includes bifacially flaked artifacts which are relatively large, elongated, regularly and/or symmetrically shaped, and pointed on at least one end. Alternately beveled forms were the most common, or at least the most easily recognized, type of knife encountered in the artifact analysis. Knives are assumed to have been used for various cutting tasks.
4. Drills. This term refers to bifacially flaked tools which have relatively narrow, elongated, pointed "blades" with triangular or lozenge-shaped transverse cross-sections formed by steep retouching. Most of the drills encountered in the analysis are expanding based, or stemmed, but drills made from notched projectile points or point preforms were also observed. As the term implies, drills were apparently used to drill holes in or through stone, bone, or wood.
5. Choppers. This category includes large, thick, tabular, ovate or triangular-shaped tools with thick, bifacially flaked cutting edges. Choppers are usually crudely made and rather heavy. They are thought to have been used for heavy cutting tasks, such as the butchering of large animals.

6. Endscrapers. This term refers to tools which exhibit steep and essentially unifacial flaking, combined with a snubnosed, usually plano-convex shape. Endscrapers with prominent medial ridges extending the length of the artifact, i.e., with triangular transverse cross-sections, are referred to as "keeled." Both circular endscrapers and the more common oblong or triangular endscrapers, the latter with wide distal, or bit, ends and narrow proximal, or butt, ends, were encountered in the analysis. Endscrapers are thought to have been used in the working of hides, primarily in the softening process.
7. Unifaces. This category encompasses large, unifacially flaked scraping tools which lack the snubnosed bit end common to endscrapers and are usually somewhat amorphously and elongatedly shaped, with at least one long, regularly shaped, steeply retouched edge. While the term itself is more descriptive than functional, unifaces of this sort were almost certainly used as an adjunct to end-scrapers in the working of hides, and for that reason are often referred to as sidescrapers.
8. Cores. This category consists of thick and usually large chipped-stone objects which are characterized by the presence of large percussion flake scars. The flake scars are occasionally placed so as to result in a sinuous, bifacial edge, but more commonly occur in a more random fashion on the surface of a stone nodule. Cores of a more regularized shape are also known (e.g., Bordaz 1970: Figures 12 and 20), but none were found at John Redmond. Cores were used as a source for flakes which could then be made into projectile points, scrapers, etc., and are tools only in the sense that they are used to make other artifacts.
9. Bifaces. This category is a descriptive, rather than functional, category. All bifacially worked chipped-stone artifacts other than "recognizable" tools and cores are included. Tips, midsections, and unnotched basal sections of projectile points or knives have been included in this category. Some bifaces may be tool preforms representing very early stages of production, others may have been quickly flaked and used once in an ad hoc manner, and still others may be nothing more than "test pieces" which were checked for workability and then discarded.
10. Retouched and Utilized flakes. This category is also more descriptive than functional, encompassing a relatively high number of irregularly shaped flakes

which exhibit marginal modification from retouch and/or use. Retouched flakes were identified by the presence of unifacial retouching along at least one edge of the flake. Some were made from fortuitously shaped flakes with snubnosed ends and are relatively regularly modified; these have been classified as retouched flake scrapers. Most of the retouched flakes, however, appear to be nothing more than "test pieces" which were flaked to check for workability and then discarded. Utilized flakes differ in displaying steep, irregular "flaking" or patterned breakage, rather than intentional retouch, along at least one edge. The wear presumably resulted from utilization of the flakes for cutting or scraping tasks.

11. Debitage. This category consists of industrial waste, unused flakes and shatter produced as a by-product of the manufacturing and repair of chipped-stone tools. Waste flakes have a more or less planar form, while shatter is characterized by a thick, irregular, "chunky" shape and a lack of sharp "leading" edges. The debitage was further differentiated according to decortication: primary decortication specimens have cortex covering all of their dorsal faces, secondary decortication specimens have cortex on only a portion of their dorsal faces, and blank decortication specimens have no cortex.

SITES DESIGNATED IN 1979

Eighty-five previously unknown sites were located, designated, and investigated during the 1979 field season. Testing of a limited nature was carried out at 25 of the sites. Extensive test excavations were undertaken at four sites, 14LY329, 14CF357, 14CF369, and 14CF1320. The work at the three former sites was accomplished primarily due to the efforts of amateurs participating in the Kansas Archeological Training Program.

Twenty of the sites were located and designated by Society archeologists working with the amateurs, and are so identified within the report. Their survey activity was concentrated in the upper part of the project area and closely adjacent potential site areas, primarily in Lyon county, where little previous archeological work had been done. The present writer was coordinated with and consulted concerning the work, but he did not personally visit each site. Therefore, the site descriptions and artifact analyses of those sites concentrate on the more specific information and diagnostic remains.

However, 15 of the newly recorded sites are on privately owned lands adjacent to but lying outside of the boundaries of the project area. Due to legal considerations and out of a desire to protect the landowners, these sites will not be discussed in detail. Their salient characteristics, however, can be described here. One site, 14CF1302, the Ottumwa College site, located in the small community of Ottumwa, consists of the fragmentary remains of the Western Christian University building destroyed by fire in 1871. The others are all prehistoric aboriginal sites. They include 14LY336, located on Eagle creek; 14CF1301, on West Hickory creek; 14CF399, 14CF1310, 14CF1311, 14CF1312, 14CF1313, 14CF1314, and 14CF1315, on Lebo creek; 14LY331, on Plum creek; and 14LY328, 14LY329, 14LY330, and 14LY337, along the Neosho in the Neosho Rapids area. All of these sites were investigated by pedestrian survey and one (14LY329) was tested as a result of Kansas Archeology Training Program activities. In terms of cultural affiliation, eight of the sites yielded no culturally diagnostic artifacts. Diagnostic artifacts recovered from the other six prehistoric sites are representative of Archaic, Middle Ceramic, and Late Ceramic manifestations. Archaic manifestations were evidenced at 14LY329 by a section of a Munkers Creek knife and at 14LY328 and 14CF1310 by Munkers Creek-like projectile points and a variety of other medium to large-sized lanceolate-shaped points. 14LY328 and 14LY329 also yielded projectile points typologically suggestive of Early Ceramic occupations; however, the evidence was insufficient to allow for a definite identification of an Early Ceramic component.

Middle Ceramic, Pomona focus components were clearly identifiable at six sites, 14CF1310, 14CF1314, 14CF1315, 14LY328, 14LY329, and 14LY330. Pottery and other material remains were especially abundant at 14CF1314, 14CF1315, 14LY328, and 14LY329, all upland sites, suggesting that relatively intensive or long-term occupations took place there. Evidence of Late Ceramic manifestations was much less abundant, consisting of one pottery sherd found at 14LY330 in association with two Pomona sherds. The sherd is typologically identifiable as a representative of Geneseo Plain ware, a pottery ware of the Great Bend aspect (Wedel 1959:233).

Site 14CF350

Site description

Reservoir location: At an elevation of 1036-1045 ft, in the flood control pool at the edge of and just above the conservation pool.

Soil type: Woodson silt loam; covered over by recent silt.

Setting: 14CF350 is in the uplands above the former right bank of the Neosho river. The site covers an area approximately 75 X 25 m in size, but may extend into the conservation pool. It is situated on the end of a shallowly sloping upland ridge, presently a point of land extending out into the reservoir from the base of the dam.

Present conditions: The site is covered by grass and weeds except where eroded. It is being adversely affected by wave-action erosion, constant water saturation, and periodic inundation. The wave action has stripped away the top soil along the edges of the landform leaving a narrow clay beach and exposing and washing artifacts out of situ. The inundation has resulted in the deposition of a great deal of recent silt and modern debris. Due to its close proximity to the dam, the site has likely been disturbed by construction activity as well, particularly the use of haul roads.

Investigations

The site was visited on one occasion during the season. The archeological investigation consisted of pedestrian survey and the collecting of exposed artifacts from the surface.

Historical research revealed that a building was present on or closely adjacent to the site in 1878. The land, and presumably the building, belonged to a R. Williams (Edwards Brothers 1878:43).

Archeological materials

The archeological materials encountered at 14CF350 consisted of historic ceramic, glass, and metal fragments. The glass and

metal were singularly nondiagnostic and were therefore left at the site, but a representative sample of the ceramic artifacts was collected.

The artifact inventory consists of stoneware and whiteware sherds. The stoneware includes three rim sherds with Albany glaze; two rim sherds with Bristol cream glaze, one of which appears to be part of a churn lid; one body sherd with a Bristol-glazed exterior and a mottled black-glazed interior; and one body sherd with a yellowish gold glaze.

The whiteware includes two body sherds, both of which are decorated on their exteriors. One has a molded and brown-painted basket-like design. The other has a flower with a yellow center and green petals, outlined in black, painted on it.

Summary and conclusions

Site 14CF350 represents the remains of an historic Euro-American farmstead and/or dump, possibly derived from the R. Williams farming operation of the 1870s. No structural remains or evidence of any other cultural features were encountered.

The site has been badly damaged by water erosion and possibly construction activity and is presently permanently water saturated and periodically inundated. The site is not historically significant and is not likely to yield any archeologically significant information.

Site 14CF351

Site description

Reservoir location: At an elevation of 1036-1045 ft, in the flood control pool at the edge of and just above the conservation pool, in the Otter Creek Recreation Area.

Soil type: Woodson silt loam; covered over in places by recent silt.

Setting: 14CF351 is in the uplands above the former right bank of Otter creek. The site covers an area approximately 80 X 30 m in size. It is situated on the north edge of a moderately sloping, northwesterly pointing upland ridge, now a point of land extending out into the reservoir.

Present conditions: The site is in a fallow field and is covered by grass and weeds except where eroded, along the shoreline. Wave action has stripped away the top soil along the edges of the land-form, leaving a wide clay beach and exposing and washing artifacts out of situ. The site is also being adversely affected by constant water saturation and periodic inundation. The inundation has deposited a great deal of silt and modern debris across the area.

Investigations

The site was visited on one occasion during the season. The archeological investigation consisted of pedestrian survey and the collecting of exposed artifacts from the surface.

Historical research revealed that a building was present on or just north of the site in 1878. The land, and presumably the building, was owned by a T. S. Baker (Edwards Brothers 1878:43).

Archeological materials

The archeological materials encountered at 14CF351 consisted of historic ceramic, glass, and metal fragments. A representative sample of the material was collected.

Ceramics: Both stoneware and whiteware were found at the site. The whiteware inventory consists of one undecorated rim sherd. The stoneware includes three rim sherds with Bristol cream glaze, three basal sherds with Albany glaze, and three rim sherds and one basal sherd with salt-glazed exteriors and Albany-glazed interiors.

Glass: One opaque, light blue rim fragment, with a molded decoration of uncertain design, and one clear, slightly pinkish basal fragment with a molded decoration consisting of low-relief ridges which radiate out from the center of the bottom of the base, were collected.

Metal: The metal inventory consists of one rusty, square-headed nail fragment with a broken flattened shank.

Summary and conclusions

Site 14CF351 represents the remains of an historic Euro-American farmstead and/or dump, possibly deriving from the T.S. Baker farming operation of the 1870s. No structural remains or evidence of any other cultural features were encountered on the surface of the site.

The site has been badly damaged by wave-action erosion, water saturation, and periodic inundation. The site is not historically significant and is not likely to yield any archeologically significant information.

Site 14CF352

Site description

Reservoir location: At an elevation of 1040-1050 ft, in the flood control pool, in the Otter Creek Game Management Area.

Soil type: Verdigris silt loam.

Setting: 14CF352 is in the bottomland on the right bank of Otter creek. The site covers an area approximately 75 X 50 m in size, on a broad alluvial knoll located just above the confluence of three minor tree-lined drainages which then proceed some 150-200 m to the north before emptying into the creek. The site is thus bordered on the west, north, and east by the drainages. The nearest uplands are 400-800 m to the south.

Present conditions: The site is in a cultivated field, and is receiving adverse impact from the effects of cultivation and occasional flooding. The site was flooded on several occasions during the 1979 field season.

Investigations

The site was visited on three occasions during the season. The archeological investigation consisted of pedestrian survey, the collecting of exposed artifacts from the surface, and the excavation of ten 60 cm² test pits. The test pits were each dug to a depth of 45 cm below surface. No cultural material was found in any of the pits.

Archeological materials

The archeological material encountered at 14CF352 consisted of historic and prehistoric artifacts and one burned and several unburned chunks of limestone. All prehistoric artifacts were collected. The historic artifacts were uninformative and possibly recent in age and were therefore left at the site along with the limestone.

Historic artifacts: The historic material observed at the site consisted of five small, clear glass fragments and one undecorated whiteware body sherd.

Prehistoric artifacts: The prehistoric artifact inventory consists of several chipped-stone tools and debitage, and one ground-stone artifact, a sandstone muller. The chipped-stone artifacts include one projectile point, one knife, two thin bifaces, one thick biface or chopper, several retouched and utilized flakes, and debitage.

The projectile point, made of tan chert, is a medium-sized, expanding-stemmed, corner-notched specimen. It has a more or less triangular blade, with one straight edge and one crudely flaked and apparently resharpened, beveled, subconcave edge. Barbs on the blade are prominent to slightly rounded, and not down-pointing. The blade is 45 mm long, with a shoulder width of 31 mm. The stem

is rather short, 11.5 mm, and rapidly expanding, with a stem width of 19 mm and a basal width of 23 mm. The base is sub-concave. Overall, the point is somewhat crudely flaked, with little or no retouch. It has a total length of 56.5 mm, a maximum width of 31 mm, and a maximum thickness of 11 mm. The artifact exhibits many of the characteristics of the Edge-wood projectile point type (c.f. Bell 1958:20), although it is somewhat larger than the norm reported for that type.

The one knife found at the site is an elongated, ovate, un-notched specimen. Made of tan field chert, the tool is somewhat crudely chipped, with little retouch. It is 75 mm long and has a maximum width of 23.5 mm and a maximum thickness of 12 mm.

Of the two thin bifaces found at the site, one is the tip section and most of the blade of a large projectile point or knife. Made of gray fossiliferous chert, the triangularly shaped biface is carefully retouched along its unbroken edges. It is 62 mm long at present, with a maximum width of 39 mm and a thickness of 7 mm.

The other thin biface, a large ovate specimen with one end broken off, is very crudely chipped of coarsely textured gray chert. The unbroken end of the piece has not been finished, and in general the artifact is relatively unshaped and unfinished. It is 64 mm long at present, with a maximum width, at the point of breakage, of 56 mm, and a maximum thickness of 9 mm.

The one thick biface found at the site is made of mottled, gray and white chert. It is a large, semicircular piece with a flat, thick, unfinished "back." All other edges of the piece are crudely flaked with no evidence of retouch. The specimen might as well have been described as a core, but with its bifacial edge and flat back it seems more appropriate to interpret it as a knife or small chopper. It has a maximum length of 58 mm, a maximum width of 41 mm, and a thickness of 26.5 mm.

Three retouched flakes were found. One, made of gray fossiliferous chert, is a long, narrow flake from which both ends have been broken off. The long edges of the piece are unifacially retouched. Functionally, the artifact was probably used as a side scraper. The two other retouched flakes, both made of heat-treated pink chert, are irregularly shaped and exhibit only minor retouch along only one of their edges.

One utilized flake was found. Made of gray fossiliferous chert, it exhibits unifacial wear along one of its edges.

Thirty pieces of debitage, including 26 waste flakes and four pieces of shatter, were collected at the site. The total includes three secondary and 23 blank decortication waste flakes, and one secondary and three blank decortication pieces of shatter. Approximately 27 percent of the debitage was heat treated.

The one ground-stone artifact found at the site is a large muller, or hand grinding stone. It is made of dense, light tan-colored sandstone, and is loaf shaped with one flat, heavily ground face. The rest of the artifact has been pecked into shape and is comparatively rough surfaced. The muller is complete, but portions of it, including the utilized face, have been marred by plowscars. The artifact is 133 mm long, 78 mm wide, and 68 mm thick.

Summary and conclusions

14CF352 is identifiable as representing the remains of an historic Euro-American farmstead and/or dump, and the remains of a prehistoric camp site. The prehistoric component is attributable to either Early Ceramic or Middle Ceramic occupation, on the basis of sparse and only relatively diagnostic lithic evidence, specifically the Edgewood-like projectile point. In lieu of more diagnostic lithic evidence or, preferably, ceramic evidence, the cultural affiliation of the site's prehistoric occupants must remain somewhat uncertainly defined. The historic component is sparsely represented and is probably the result of the chance deposition of artifacts rather than an actual historic occupation. No historic or prehistoric structural remains were encountered at the site, but sparse and somewhat inconclusive evidence of hearths were found in the form of one burned limestone rock. Limited testing, however, produced no evidence of subsurface cultural evidence.

The site has been adversely affected by cultivation and periodic inundation. Judging from the negative testing results, cultivation appears to have destroyed the site's primary archeological context. The site is not historically significant and it appears unlikely to yield any archeologically significant information, although the finding of additional artifacts could result in a more precise determination of its prehistoric cultural affiliation.

Site 14CF353

Site description

Reservoir location: At an elevation of 1040-1050 ft, in the flood control pool, in the Otter Creek Game Management Area.

Soil type: Verdigris silt loam.

Setting: 14CF353 is in the bottomland on the right bank of Otter creek. It covers an area approximately 50 X 50 m in size on a prominent alluvial knoll just above the confluence of two minor tree-lined drainages. The drainages proceed north some 100-150 m before emptying into Otter creek. The larger of the two drainages borders the site on the immediate west; the smaller drainage lies along the north edge of the site. A north-south-trending gravel road is located 50-75 m to the east of the site. A broad swale forms the site's southern boundary, separating it from an alluvial knoll 50-75 m to the south on which a large amount of historical material, including limestone building slabs, is located.

Present conditions: The site is in a cultivated field and has been adversely affected by the effects of cultivation and occasional flooding. It was flooded on several occasions during the 1979 field season. The extreme western edge of the site is covered with small trees.

Investigations

14CF353 was visited on five occasions during the summer. The archeological investigation consisted of pedestrian survey, the collecting of exposed archeological materials from the surface, the taking of four soil-core probes, and the excavation of nine 60 cm² test pits. The test pits were situated along the crest and slopes of the knoll, with two pits being located within the forested western portion of the site (see Figure 3). The pits were excavated to depths ranging from 30-70 cm below the surface, until sterile soil was reached or the remains adequately defined.

The investigation revealed a plow zone which extended to a depth of 15-20 cm below surface. Intact cultural remains, primarily prehistoric in origin, were found beneath the plow zone in all nine test pits. Two cultural features were identified as a result of the testing. One was a prehistoric hearth, in test pit #4, and the other was a historic building foundation, in test pit #1.

The hearth consisted of small burned limestone and sandstone slabs along with a few artifacts and faunal remains and scattered charcoal and burned earth flecking. The remains of the hearth were confined almost entirely within the plow zone and the first 10 cm below the base of the plow zone, although charcoal and burned earth flecking extended to a depth of 35 cm below the base of the plow zone. Judging from the abundance of limestone and sandstone in the plow zone, most of the feature had been truncated by plowing.

The historic building foundation consisted of limestone slabs accompanied by a few metal fragments, including two square nails. The foundation extended to a depth of at least 30 cm below the

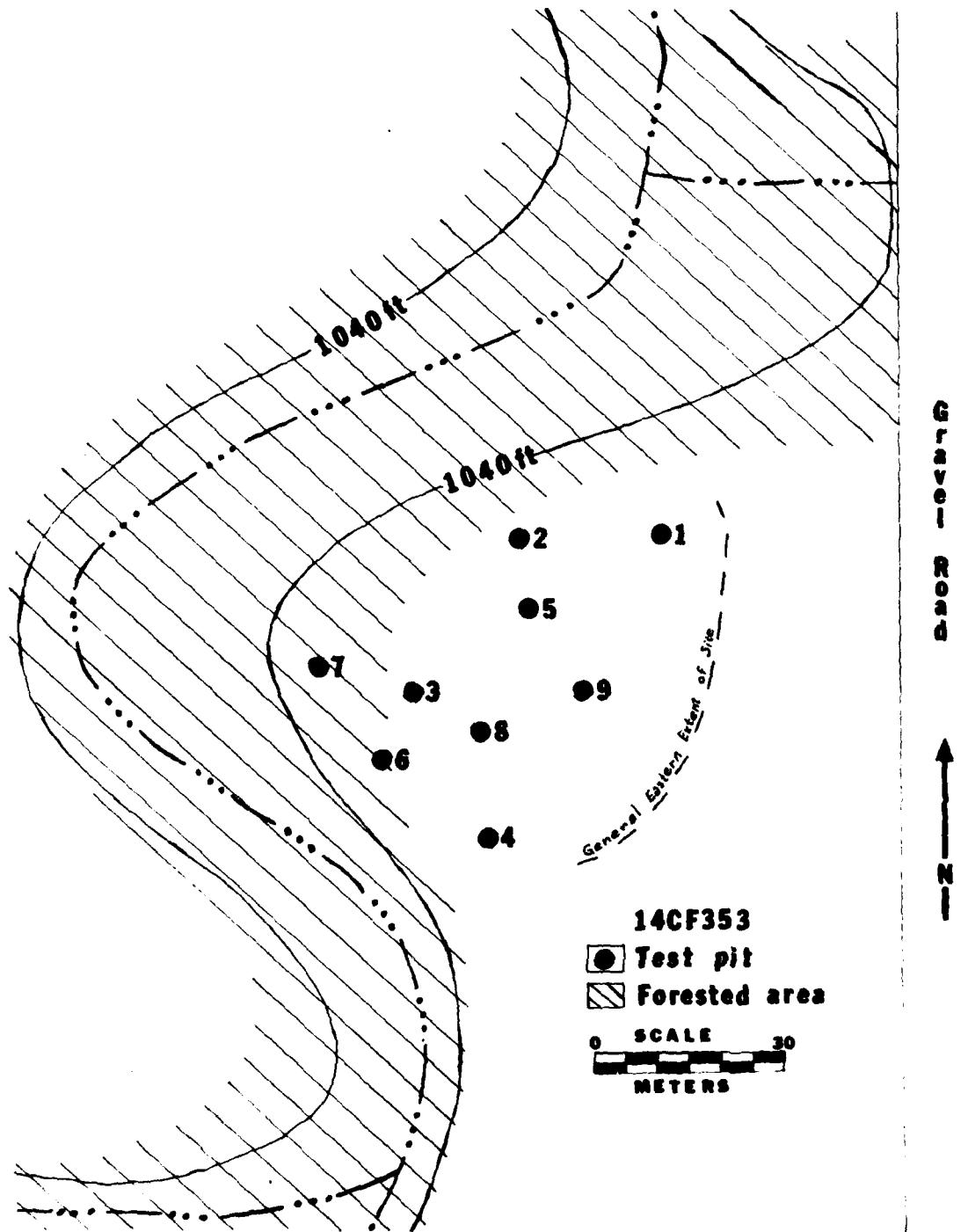


FIGURE 3. Map showing location of test excavations at 14CF353.

surface, at which point the excavation was terminated due to the apparently insignificant nature of the remains. No attempt was made to ascertain the complete horizontal and vertical dimensions of the foundation.

No other cultural features were identified during the investigation, but prehistoric cultural remains were found beneath the plow zone in varying amounts in almost all the other pits. The bulk of the subsurface remains, especially the artifactual and faunal material, was concentrated in the initial 10-20 cm below the base of the plow zone. The deepest artifact encountered at the site was a chert flake recovered from a depth of 60-70 cm below the surface in test pit #2. Charcoal and burned earth flecking commonly extended somewhat deeper than the other remains, being encountered in several pits at depths of up to 60-70 cm below the surface. No indications of cultural or natural stratigraphy were noted other than the obvious historic/prehistoric differentiation evidenced by the building foundations. For that reason, the prehistoric remains are treated as a single group in the artifact descriptions which follow.

Historical research revealed that a building was present on the knoll just south of the site in 1878. The land, and presumably the building, was owned by T. T. Hildreth (Edwards Brothers 1878: 53).

Archeological materials

The archeological materials encountered at 14CF353 consisted of historic and prehistoric artifacts, burned and unburned faunal remains, charcoal and burned earth flecking, and burned and unburned limestone and sandstone. The collection procedure aimed at the recovery of all artifacts and faunal remains found in primary context below the plow zone. Unfortunately, the charcoal and burned earth flecks were too small to warrant collection. From the surface and plow zone of the site, all prehistoric ceramics and lithic tools and all faunal remains were collected, along with a representative sample of the historic material and the prehistoric lithic debitage. None of the limestone and sandstone at the site was collected.

Historic artifacts: The historic artifact inventory consists of a partially broken curved bridle bit, collected from the surface of the site, and two square nails and a few assorted unidentifiable metal fragments, found in association with the historic building foundation in test pit #1.

Prehistoric artifacts: The prehistoric artifact inventory consists of several different kinds of ceramic artifacts, and a number of lithic artifacts, including chipped-stone projectile points, bifaces, an endscraper, retouched and utilized flakes, cores, and debitage.

Ceramic artifacts: Two rim sherds and 15 body sherds were found at the site, mainly on the surface and in the plow zone. The pottery can be differentiated primarily on the basis of tempering. One sherd is grit tempered and the rest are indurated-clay tempered, the indurated clay being accompanied in some cases by sparse inclusions of small grit and/or sand particles which may be natural constituents of the clay.

The grit-tempered specimen is a body sherd which was recovered from 0-8 cm below surface in test pit #7. The sherd is tempered with a moderate amount of grit, the particles ranging in size from very small up to 2.5 mm in diameter. Quartz, biotite (mica), and feldspar appear to be the most common constituents of the temper. Both angular and rounded edges are evident on the particles, suggesting that crushed granite and/or sand was used. No indurated-clay particles are observable.

The sherd can also be differentiated from the rest of the ceramic inventory on the basis of its decoration. It is decorated on its (apparent) exterior surface by a slightly curving trailed line approximately 5 mm wide. A portion of another more or less parallel line appears to be present some 20 mm away, along the broken edge of the sherd. In addition to the trailing, the sherd has a portion of one other decorative, or possibly functional, element, a conoidal drilled hole. The hole is approximately 13 mm in outside diameter and was apparently drilled from the exterior. It is situated between the two trailed lines, on one of the broken edges of the sherd.

In most other respects, the sherd does not differ significantly from the other sherds at the site. Both its exterior and interior surfaces are smoothed, and it has a medium-fine surface texture and a laminated core. The exterior surface and the core of the sherd is dark brown, and the interior is tan. Morphologically, the sherd is rapidly thickening, ranging from 9-11.5 mm thick, but is otherwise generally uninformative. However, the rapid thickening of the specimen, when considered with the decoration, suggests that the sherd was from the shoulder of the vessel. Typologically, the sherd has its closest affinities with the pottery wares produced during the Early Ceramic period by the Grasshopper Falls phase and Kansas City Hopewell peoples of northeast Kansas.

As previously stated, all the other pottery from the site is tempered with indurated clay. The particles in some cases range up to 4 mm in diameter. However, one rim sherd and one body sherd from the surface, one body sherd from in or just under the hearth, and one body sherd from just below the plow zone in test pit #5 also contain a limited amount of grit and/or sand. The generally rounded particles are both small in size and sparse in abundance, and may

represent naturally occurring constituents of the clay. Nevertheless, it is possible that they represent an intentionally added tempering agent, especially when their association with a definitely grit-tempered sherd is considered.

Surface textures of the indurated-clay-tempered sherds are generally fine, with the cores being laminated or contorted, sometimes markedly contorted. The surface colors range from orangish tan to brown; cores are the same. Exterior surfaces of the sherds are almost entirely plain. One body sherd appears to be not only smoothed, but polished. Only two sherds exhibit any clear evidence of cord roughening, and both specimens are partially smoothed over, one markedly so. One other sherd, a rim sherd, exhibits horizontal scraping or wiping marks on its exterior surface, as well as its interior. About half of the sherds, in fact, exhibit scraping or wiping marks on their interior surfaces, and many have rather lumpy interiors.

Only one sherd, a rim sherd (Plate 1,A) is decorated. The decoration consists of parallel, short, vertically oriented, medium-gauge cord impressions, spaced 3-4 mm apart and located just below the exterior edge of the lip. The impressions are rather vague and are therefore uninformative as to the exact nature of the cord. The other of the two rim sherds (Plate 1,B) is not decorated but exhibits horizontally oriented scraping or wiping marks on its exterior surface.

In terms of vessel morphology, the rapid thickening of two body sherds suggests that the original vessels had thick, although not necessarily conoidal, bases. Generally, the body sherds from the site are relatively thick, ranging in thickness from 6-12.5 mm, with an average of around 9 mm. The rim sherds are somewhat more informative. The decorated rim sherd lacks almost all its neck but appears to be vertical, with an apparent rim height of 25 mm. It has a slightly flattened lip, 6-7 mm thick, and thickens slightly towards the neck to a thickness of 8 mm. The other rim sherd has a short, vertical rim with a rim height of 11-12 mm. It has a well-defined neck and a sloping shoulder. Its lip is narrowed and rounded, 4 mm thick, with the rim thickening to 5.5 mm at the neck and shoulder.

Typologically, these sherds exhibit the characteristics of both Verdigris and Greenwood types of the Greenwood phase and Pomona ware of the Pomona focus. The smoothed or heavily smoothed-over cord-roughened exterior surfaces of the sherds are quite similar to Verdigris ware as found at the Curry site and defined by Calabrese (1967:58-60). The indurated-clay tempering, however, and the apparent vessel shape as represented by the rim sherds, are more in keeping with the transitional Greenwood type (Calabrese 1967:60-62), or with Pomona ware as defined by Wilmeth (1970:29-33). In the writer's view, they can be tentatively regarded as variants of Verdigris or Greenwood.

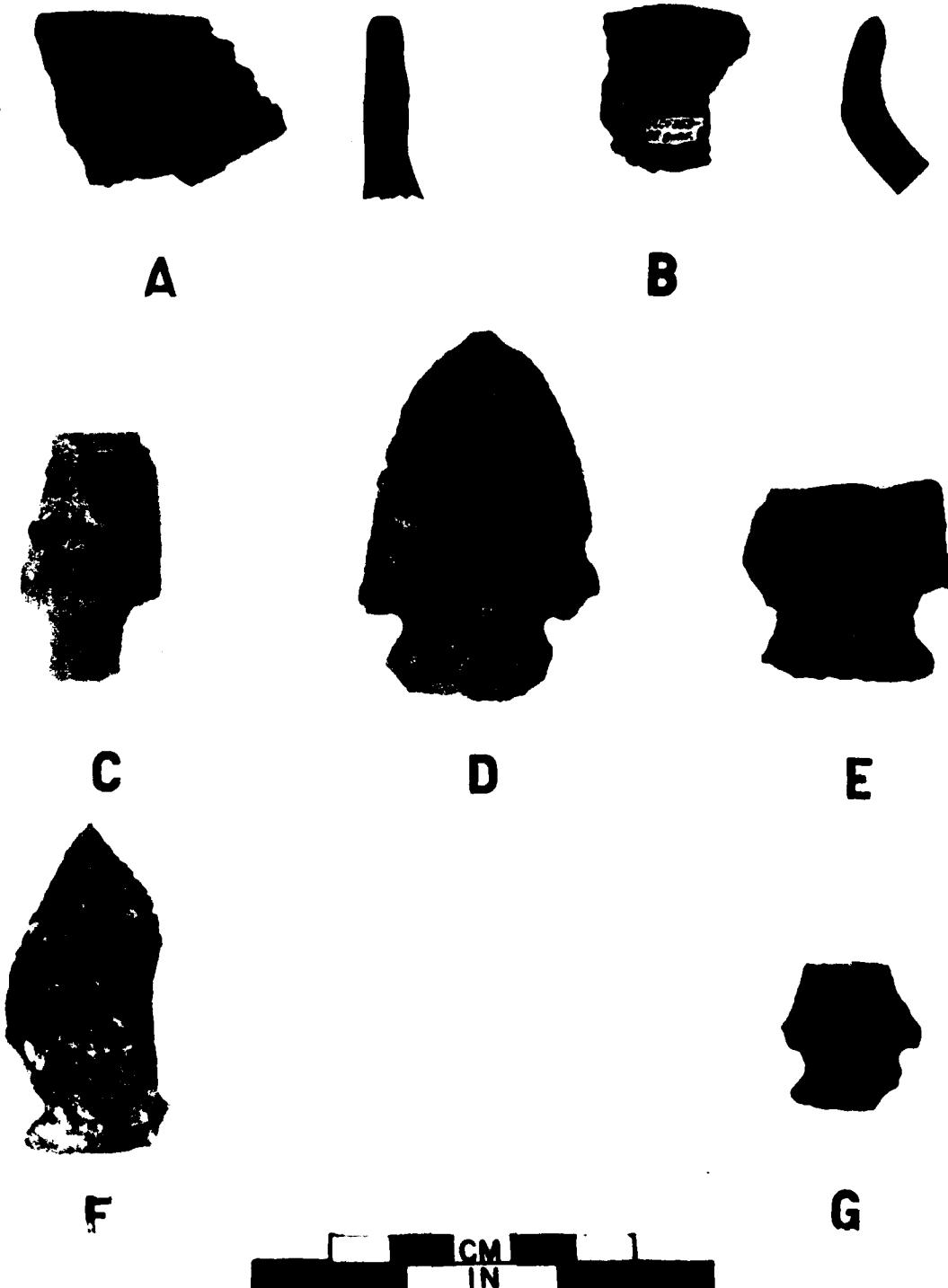


PLATE 1. Selected artifacts from 14CF353.

Lithic artifacts: Five projectile points, eight bifaces, one endscraper, one retouched flake, three utilized flakes, three cores, and debitage were found during the investigation. Nearly all the material was collected from the surface and plow zone.

Projectile points: The projectile point inventory consists of one contracting-stemmed and four expanding-stemmed points, all collected from the surface of the site. All are pictured in Plate 1.

The contracting-stemmed point (Plate 1,C), which lacks its tip section, is made of mottled, tan-colored field chert. Cortex is present on a portion of one face. The specimen is somewhat elongated and asymmetrically shaped, with a slightly contracting, more or less rectangular stem and a subconvex, nearly straight base. Both the barbs and the tangs are angular and well defined. The specimen has a maximum thickness of 7.5 mm, a shoulder width of 23 mm, and appears to have been around 56 mm long. The stem is 13-14 mm wide, and 12 mm long, and has a basal width of 12 mm. Typologically, the artifact bears a resemblance to the Gary or Yarbrough point types described by Bell (1958:28, and 1960:98, respectively).

All of the expanding-stemmed projectile points were formed by corner notching, which in some cases approaches side notching. The only complete point of the group is a large, broad specimen (Plate 1,D), made of somewhat coarsely textured tan chert. It is crudely chipped, with no retouching, and has slightly rounded tangs, barbs, and tip. The blade is subtriangular in shape, with convex sides. The stem is short and rapidly expanding, with a subconvex, nearly straight base. The point has an overall length of 61 mm, a shoulder width of 39 mm, and a maximum thickness of 11 mm. The stem is 14 mm long, and 23 mm wide, and has a basal width of 27 mm. Typological affinities with the Williams point type (c.f. Bell 1960:96) seem likely.

One other large and relatively broad point (Plate 1,E) was found. Made of finely textured gray chert, the specimen is crudely flaked with no retouching. The upper part of its blade has been broken off, along with one barb and a portion of one tang. The point has a rapidly expanding stem with a subconvex base. The specimen is 9.5 mm thick, and was apparently around 35 mm wide, and 55 mm long. The stem is 13 mm long, and 22 mm wide. The basal width was apparently around 28 mm wide. No exact typological affinities were inferred for the artifact, but it bears some resemblance to the Ensor and Ellis point types described by Bell (1960:34, and 1960:32, respectively).

The third of the expanding-stemmed points (Plate 1,F) is a medium-sized specimen of very fossiliferous, gray chert, crudely

flaked with little or no retouch. It is broken along most of one side, and the barb, which appears to have been quite rounded, is missing from the other side. The blade is ovately triangular, with a sharp, pointed tip, and the stem is short and rapidly expanding, with a rounded tang and subconvex base. The artifact is 7.5 mm thick and 55.5 mm long and was apparently 30 mm wide at the shoulder. The stem is 10 mm long and 19 mm wide, with an estimated basal width of 26 mm. Typologically, the point bears some resemblance to the Ensor point type described by Bell (1960:34).

The last of the points to be discussed is a small, slightly asymmetrical, crudely flaked, and largely incomplete specimen (Plate I,G), made of heat-treated, red and gray banded field chert. The tip section, one tang, and one barb are missing from the artifact. No retouch is present on the specimen, which has one beveled blade edge. Both of the extant blade edges are slightly concave, suggesting that the blade had been resharpened. The stem is short and rapidly expanding, with an angular tang and a subconvex base. The point is 7 mm thick and was apparently around 25 mm wide at the shoulders, and around 40 mm long. The stem is 9 mm long and 15.5 mm wide, and had a basal width of around 21 mm. No exact typological affinities were inferred for the artifact. Judging from its crudity of form and workmanship, the artifact may be a preform broken in manufacture.

Bifaces: The biface inventory includes two complete specimens, one nearly complete specimen, one tip section, three midsections, and one scraper-like specimen. All but one were found on the surface or in the plow zone. The single exception is one of the midsections, which was recovered from within the undisturbed portion of the hearth in test pit #4. It is 20 mm wide and 6 mm thick, and appears to be the midsection of a projectile point or knife made of coarsely textured grayish brown chert.

The two complete bifaces are both large, ovate, very crudely flaked artifacts with no evidence of retouch. One is made of mottled, gray and brown chert and the other is the remnant of a thin field-chert cobble. The former is 65 mm long, 45 mm wide, and 17 mm thick. The other is 57 mm long, 49 mm wide, and 20 mm thick. One nearly complete specimen was also found. It is a large, ovately triangular biface with one sharply pointed end. One side of the base of the artifact is missing. The artifact is made of grayish brown field chert and has been lightly retouched along its edges. It measures 61 mm long, 35 mm wide, and 12 mm thick.

The tip section and the two midsections appear to be portions of medium-sized projectile points or knives. All are crudely flaked with no evidence of retouch. The tip section is made of grayish brown chert and is 11.5 mm thick, and 33.5 mm wide. Only

one of the two midsections retains both edges of the original artifact. It is made of grayish brown chert and is subtriangular in shape, with a thickness of 7 mm and a maximum width of 29.5 mm. The other midsection is made of fossiliferous gray chert and is 8 mm thick.

The single scraper-like biface fragment is a relatively large, ovate or circular specimen made of fossiliferous gray chert. One side, or end, of the artifact is broken off. The specimen is bi-facial along all its unbroken edges, but is steeply flaked on one face, suggesting that it was used or intended for use as a scraper or gouge. The artifact has a maximum thickness of 14 mm and a maximum width of 45 mm.

Endscrapers: The endscraper inventory consists of one specimen, made of heat-treated, mottled, pink and gray chert. It is triangular in shape, prominently keeled on its dorsal face, and plano-convex in longitudinal cross-section. The bit exhibits steep unifacial retouch, but the lateral edges of the artifact display heavy bifacial utilization wear, possibly from hafting or socketing of the tool. It is 34.5 mm long, with a maximum width of 24.5 mm and a maximum thickness of 8.5 mm.

Retouched flakes: Two retouched flakes were found, on the surface of the site. One is a large flake of heat-treated, mottled, pink and gray banded chert. It is somewhat amorphously shaped, with one long edge and two shorter edges. It exhibits steep unifacial retouch along almost all its edges and is 10 mm thick, 83 mm long, and 39 mm wide. The other retouched flake is made of finely textured gray chert. It is narrow, with one rounded end and one broken end, and exhibits heavily utilized, steeply retouched edges. Functionally, the artifact may be the proximal or butt end of an endscraper. The fragment is 20 mm wide and 8 mm thick.

Utilized flakes: Three utilized flakes were recovered, one from just below the plow zone in test pit #7. The subsurface specimen is made of fossiliferous dark gray chert and exhibits slight unifacial utilization wear along two of its three edges. Of the other two flakes, both from the surface of the site, one is made of light tan-colored chert and has been bifacially utilized along one of its straight edges. The other flake is made of gray and white banded chert and has two small unifacially utilized concavities, indicating use as a spokeshave.

Cores: Three small cores were recovered from the surface of the site. Two are remnants of tan field-chert cobbles. The other is fossiliferous brown chert with orangish tan limestone cortex.

Debitage: A total of 104 pieces of chipped-stone debitage, including 85 waste flakes and 19 pieces of shatter, was found at the site. The majority were found on the surface and in the plow zone, with 16 pieces of debitage coming from below plow zone in a few of the test pits. The debitage includes three primary, 20 secondary, and 62 blank decortication flakes, and four primary, nine secondary, and six blank pieces of shatter. The majority of the primary and secondary specimens exhibit field-chert cortex; four specimens have limestone cortex. Approximately 32 percent of the debitage appears to have been heat treated.

Faunal remains: A total of two teeth and two teeth fragments, and two bones and 45 bone fragments were recovered during the investigation. The material was about equally divided between surface/plow zone and below-plow-zone locations. Two unburned identifiable bones, along with one burned and nine unburned unidentifiable bone fragments, were found in association with the intact portions of the hearth in test pit #4. The two identifiable bones include the distal phalanx of an antelope or small deer and a carpal or tarsal bone from a similarly sized animal. Other identifiable remains found at the site include teeth, two rib fragments, and the distal end of a metatarsal. Those remains, all from the surface, appear to be from a large animal, probably bison. A few of the less identifiable remains appear to be sections of long bones from a similarly sized animal. Two other animal bones are small cranial bones which may derive from small burrowing animals only indirectly connected with the prehistoric occupation. A little less than a third of the remains have been burned.

One small piece of mollusc shell was also found, just below the plow zone in test pit #2. It is a small, unburned fragment.

Summary and conclusions

14CF353 is identifiable as representing the remains of an historic Euro-American farmstead and the remains of a prehistoric camp site. Portions of both components are contained in primary archeological context below the plow zone, but the majority of the remains appear to have been disturbed, primarily by cultivation. The historic component is represented by artifactual material and the remains of a limestone building foundation, possibly derived from the T.T. Hildreth farming operation of the 1870s. It is not historically significant. The prehistoric component is represented by artifactual material and the remains of a hearth. Judging from the presence of medium to large-sized corner-notched and stemmed projectile points in association with predominately smooth-surfaced pottery and a grit-tempered sherd, along with the absence of small

triangular projectile points, the component can be attributed to the Greenwood phase of the Early Ceramic time period.

The prehistoric component is notable in that it is one of the few definite Early Ceramic manifestations encountered in the investigation. The ceramic assemblage is particularly interesting, since the indurated-clay tempering and the apparent vessel morphology, combined with the heavily smoothed exterior surface treatment, suggests a transitional stage between Greenwood phase and Pomona focus. Moreover, the presence of a grit-tempered sherd along with several possibly grit-tempered sherds suggests contact of some sort with Grasshopper Falls phase or Kansas City Hopewell groups, much the same situation as was found at the Gilligan site a few miles away (c.f. Jones and Witty 1980: 82-87).

But while the site has produced archeologically significant data, it appears to have very little investigative potential. The historic remains are not historically significant and the building has been largely destroyed. The site is not large, and it had only one apparent prehistoric cultural feature, the hearth, which has already been excavated. Even though prehistoric remains were found below the plow zone, the bulk of the component has been disturbed by cultivation and the digging of the building foundation. Further excavations would likely reveal little beyond what is already known about the prehistoric occupation. The site thus appears to have little or no potential for yielding any further archeologically significant information.

Site 14CF354

Site description

Reservoir location: At an elevation of 1040-1050 ft, in the flood control pool, in the Otter Creek Game Management Area.

Soil type: Verdigris silt loam.

Setting: 14CF354 is in the bottomland on the right bank of Otter creek. It covers an area approximately 30 X 30 m in size on the crest of a small alluvial knoll some 20-30 m southwest of the creek. A long swale leading into the creek borders the site on the immediate northwest, but few other surface features are visible in the area. The nearest uplands are 400-600 m to the southeast.

Present conditions: The site lies in a cultivated field and is receiving adverse impact from cultivation and occasional flooding. It was flooded on several occasions during the 1979 field season.

Investigations

The site was visited twice during the season. The investigation consisted of pedestrian survey and the collecting of artifacts from the surface.

Archeological materials

The archeological materials encountered at 14CF354 consisted of prehistoric lithic artifacts, one piece of bone, and a few sandstone fragments. The artifacts and bone were collected; the sandstone was left at the site.

The artifact inventory consists of one small quartzite hammer-stone and 13 chert waste flakes. The hammerstone is a small, oblong cobble, broken and battered on one end. Thedebitage consists of two secondary and 11 blank decortication flakes. Both of the secondary decortication specimens were derived from field chert. Three of the flakes appear to have been heat treated. One piece of bone was found. It is a small, unburned, unidentifiable fragment, possibly recent in age.

Summary and conclusions

14CF354 is identifiable as representing the remains of a prehistoric camp site of indeterminate age and cultural affiliation. No structural remains or evidence of any other cultural features were found. The solitary piece of bone may indicate the presence of buried cultural remains, but the fragment is isolated and unburned and could very well be recent in age, the result of alluvial deposition or predator activity.

The site has been adversely affected by cultivation, but due to its bottomland location it is possible that buried remains still exist in primary context. Testing will therefore be necessary for a determination of the site's scientific significance.

Site 14CF355

Site description

Reservoir location: At an elevation of 1040-1050 ft, in the flood control pool, in the Otter Creek Game Management Area.

Soil type: Verdigris silt loam.

Setting: 14CF355 is in the bottomland on the right bank of Otter creek. The site covers an area approximately 30 X 30 m in size on a small alluvial knoll on the immediate right bank of a minor tree-lined drainage which is an overflow channel of Otter creek.

Another site, 14CF356, is located just northwest of 14CF355 and is separated from it by a northeasterly trending swale which leads into the drainage. It is possible that the swale is relatively recent in age, suggesting that 14CF355 and 14CF356 may represent the remains of the same occupants. The drainage into which the swale empties originates near the right bank of Otter creek, flows east along the north edge of 14CF356, curves to the south at a point just north-northeast of 14CF355, passes by the east side of that site, and then meanders 200-400 m to the east and north before emptying into the right bank of Otter creek. The flow of water in the drainage has been impeded by the emplacement of an earthen dike located just upstream of 14CF355. The nearest uplands are some 400-800 m to the south of the site.

Present conditions: The site is in a cultivated field and has been adversely affected by the effects of cultivation and occasional flooding. It was flooded several times during the 1979 field season.

Investigations

The site was visited on three occasions during the summer, one of those times by the Kansas Archeological Training Program survey group. The investigation consisted of pedestrian survey and the collecting of exposed archeological materials.

During the first two visits to the site, all artifacts other than sandstone and limestone were collected. On the third visit, only recognizable tools and diagnostic artifacts were taken. Unfortunately, description of the artifact inventory has been complicated by the fact that the Kansas Archeological Training Program group, on the second visit to the site, treated both 14CF355 and 14CF356 as one site and bagged the material from both sites together. However, as there is a good possibility that the two sites do indeed represent the same occupation(s), the mixing of artifacts is not as unfortunate an occurrence as might be imagined. Analysis of the mixed inventory, moreover, did not reveal the presence of any artifacts of a significantly different nature than those known to have come from the sites. The following analysis deals only with the material known to have been recovered from 14CF355 per se. The combined material is described separately, following the *Summary and conclusions* section of the 14CF356 site report.

Archeological materials

The archeological materials encountered at 14CF355 consisted of prehistoric ceramic and lithic artifacts, a limonite fragment, and several small chunks of burned limestone and sandstone. The stone was concentrated in the eastern portion of the site, just off the crest of the knoll.

Ceramic artifacts: One neck sherd and five body sherds were recovered from the site. The sherds range from 4-7 mm thick, with an average of 5.6 mm. All six sherds were tempered with indurated clay and exhibit somewhat laminated cores. Surface textures are fine, and all six sherds are somewhat eroded and oxidized. Surface colors range from tan and light brown to light orange. The sherds have cord-roughened exteriors--one sherd has been partially smoothed--and plain interiors.

Judging from the neck sherd, the cord roughening was vertically oriented. The cordage was fine to medium in size and rather rough in texture. Cord twist--an S-twist--was determinable on only one sherd, the lack of determination on the others being due to the effects of erosion as well as the roughness of the impressions. Vessel morphology is inferable from only the neck sherd; a fairly well defined neck, leading to somewhat flaring shoulders, is indicated.

Lithic artifacts: The lithic artifact inventory consists of one chipped-stone knife, two thin bifaces, two thick bifaces, two retouched flakes, one utilized flake, one core, 16 waste flakes, and one piece of shatter. No ground-stone artifacts were found.

The knife is made of slightly fossiliferous gray chert. No cortex is visible on the tool. It displays rather crude flaking along all its edges, with only very minor and localized retouching. Morphologically, the knife is fairly long (67 mm) and narrow (25 mm), with a convex base at one end and an off-center point at the other. One side, or edge, is convex in shape, the other is slightly concave. The artifact is 12 mm thick, with a somewhat triangular cross-section.

The two thin bifaces were made from gray chert, one very fossiliferous, the other banded. No cortex is present on either. Both appear to have been heat treated. One is pointed and may be the tip of a broken knife or projectile point, the other is apparently a section of a broken bifacial tool of some kind.

The two thick bifaces were both made from the same heat-treated, fossiliferous gray chert as the one thin biface. No cortex remains on the two. Flaking on both is very crude, with no recognizable shaping having taken place. Both artifacts may simply be test pieces.

The two retouched flakes were both heat treated. One is a very light orange, banded chert, with limestone cortex remaining along the striking platform. The artifact displays minimal unifacial retouch along opposite edges on opposing faces. The other retouched flake is made of a blank decortication, white-colored chert flake. It is somewhat more extensively retouched

and shaped than the other, and has one rounded tip which resembles the proximal end of an endscraper. It is broken on its other end. The form of the artifact and the nature of the flaking suggests that it may be a scraper preform which broke during manufacture.

The single utilized flake was produced from a small, heat-treated, pink and white banded chert flake. It displays two unifacially utilized concavities, suggesting that it may have been used as a spokeshave.

The one core found at the site is the same heat-treated, highly fossiliferous, gray chert that several of the bifaces are made of. No cortex is present on the surface of the artifact.

A total of 17 pieces ofdebitage, including 16 waste flakes and one piece of shatter, were collected at the site. The total includes five secondary and 11 blank decortication flakes, and one secondary shatter. Three of the flakes are the highly fossiliferous gray chert noted earlier. Two of the secondary specimens are field chert, the others have limestone cortex. Approximately 35 percent of thedebitage appears to have been heat treated.

Limonite: One small piece of limonite was collected. No grinding striations are observable, but the rock appears to have been flaked on one face. The specimen may have been brought to the site for use as a pigment source.

Summary and conclusions

14CF355 is identifiable as representing the remains of a prehistoric camp site attributable, on the basis of ceramic evidence, to the Pomona focus of the Middle Ceramic time period. No structural remains were found at the site, but evidence of hearths was encountered in the form of scattered burned limestone and sandstone.

The site has been adversely affected by cultivation, but its bottomland location and the surficial presence of burned rock suggests that buried remains, particularly hearths, might still exist in an undisturbed condition. Testing will therefore be necessary for a determination of the site's scientific significance.

Site 14CF356

Site description

Reservoir location: At an elevation of 1040-1050 ft, in the flood control pool, in the Otter Creek Game Management Area.

Soil type: Verdigris silt loam.

Setting: 14CF356 is in the bottomland on the right bank of Otter creek. The site covers an area approximately 60 X 30 m in size on the crest and southern slope of an east west-trending alluvial ridge located on the immediate right bank of a minor tree-lined drainage, an overflow channel of Otter creek. Another site, 14CF355, is located to the southeast of 14CF356 and is separated from it by a northeasterly trending swale which leads into the drainage. It is possible that the swale is relatively recent in age, suggesting that the two sites represent the remains of the same occupation(s). The drainage into which the swale empties originates near the right bank of Otter creek, flows east along the north edge of 14CF356, curves to the south and passes by the east side of 14CF355, and then meanders 200-400 m to the east and north before emptying into Otter creek. The flow of water in the drainage has been impeded by the emplacement of an earthen dike located just east of 14CF356. The nearest uplands are some 400-500 m to the south of the site.

Present conditions: The site is in a cultivated field, and has been adversely affected by cultivation and occasional flooding. It is possible that portions of the eastern end of the site served as a borrow area for dirt used in the construction of the earthen dike in the drainage.

Investigations

14CF356 was visited on three occasions during the summer, one of those times by the Kansas Archeological Training Program survey group. The investigation consisted of pedestrian survey and the collecting of exposed archeological materials. Unfortunately, description of a portion of the artifact inventory has been complicated by the fact that the Kansas Archeological Training Program survey group treated both 14CF355 and 14CF356 as one site, bagging the materials from both sites together. However, since there is a good possibility that the two sites represent the same occupation(s), the mixing of artifacts is not as unfortunate an occurrence as might be imagined. The following analysis deals only with the material known to be from 14CF356 per se. The combined material is described separately, following the Summary and conclusions section.

Archeological materials

The archeological materials encountered at 14CF356 consisted of prehistoric ceramic and lithic artifacts, faunal material, and several scattered chunks of burned limestone. The limestone was left at the site, but all artifacts and faunal material were collected.

Ceramic artifacts: One small, indurated-clay-tempered body sherd was found. The surface texture is fine and the core is laminated. Surface and core colors are light brown. The surface treatment consists of a plain interior and a cord-roughened exterior. The cord impressions were produced by the use of medium-gauge S-twist cord, with the impressions spaced 4-5 mm apart and oriented in a parallel fashion. Morphologically, the sherd is 7 mm thick but is otherwise uninformative.

Lithic artifacts: The lithic artifact inventory consists of chipped stone and includes two projectile points, one retouched flake, one core remnant, and debitage.

One of the two projectile points is made of heat-treated, mottled, pinkish colored chert. It is small, thin, and triangular in shape, with single side notches and a basal notch. Edges are straight and have been carefully retouched. The point measures 25 mm long, 16 mm wide at the base, and 3.5 mm thick. It is identifiable typologically as a representative of the Harrell projectile point type (c.f. Bell 1958:30).

The other point is made of heat-treated, mottled, orangish colored chert. It is small, thin, and triangular in shape, with double side notches and straight, carefully retouched edges. The notches are located fairly close to the base, with the lower notch elements being less pronounced than the upper. The point measures 19 mm long, 9.5 mm wide at the base, and 2 mm thick. An affinity with the Huffaker projectile point type (c.f. Bell 1960:58) is apparent.

The remainder of the artifactual material is not culturally diagnostic. The retouched flake is made of gray chert and exhibits very minor unifacial retouching along opposite edges of the flake, on opposing faces. The core remnant is a small, heat-treated field-chert cobble from which several flakes were struck.

A total of seven pieces of debitage, consisting of two secondary and five blank decortication waste flakes, were collected. Both secondary specimens were derived from field chert. Only one piece of debitage appears to have been heat treated.

Faunal material: One unburned tooth fragment was recovered. The morphological characteristics of the fragment indicate it as being derived from a large animal such as a bison, elk, or deer.

Summary and conclusions

14CF356 is identifiable as representing the remains of a prehistoric camp site attributable, on the basis of diagnostic ceramic and lithic evidence, to the Pomona focus of the Middle Ceramic time period. No structural remains were encountered at

the site, but evidence of hearths was found in the form of a limited amount of burned limestone.

The site has been adversely affected by cultivation and possibly by construction. Its bottomland location and the presence of burned rock suggests buried remains, particularly hearths, might still exist in an undisturbed condition. Testing will therefore be necessary for a determination of the site's scientific significance.

Artifacts of uncertain provenience

As previously mentioned, material was on one occasion collected from 14CF355 and 14CF356 and mistakenly bagged together. "About two-thirds" of the inventory reportedly came from 14CF355 (John Reynolds, personal communication, 1979). The material consists mainly of chipped stone and includes projectile points, knives, bifaces, endscrapers, retouched and utilized flakes, a hammerstone, and debitage, along with faunal remains of various kinds.

All three of the projectile points appear to be more properly classifiable as preforms, since none appear to be completely finished. One, made of heat-treated, fossiliferous gray chert and lacking its tip section, is small, thin, and triangular, with three side notches on one lateral edge and one on the other. The notched edge is more or less straight but the unnotched edge is very slightly concave, as is the base. The preform measures 14 mm wide at the base and is 2.5 mm thick. Typologically, the artifact is reminiscent of the Huffaker projectile point type (c.f. Bell 1960:58).

The second of the three preforms is small and triangular, with straight sides and a slightly notched base. It has been bifacially flaked but there is very little retouch. Flaking is incomplete, with some edges and the midsection of the artifact remaining to be thinned. The preform measures 29 mm long, 21 mm wide at the base, and 5.5 mm thick. In its present stage of production, the artifact is describable as a preform for a projectile point of the Fresno type (c.f. Bell 1960:44) or one of the variety of small, thin, triangular, notched projectile point types.

The last of the three projectile points is medium in size, and more elongated and ovate in shape than the two others; in addition, it is stemmed. The stem is contracting, and has a subconcave base. The blade is somewhat ovate, with a fairly straight-edged body contracting sharply at the distal end into a sharp, pointed tip. The artifact was fashioned from a somewhat coarsely textured, heat-treated, orangish gray chert flake, and has one flat face (the ventral face of the flake) while exhibiting "keeling" on its other

face. To describe these observations in other terms, the morphology of the artifact is similar to that of the familiar keeled endscraper, displaying a plano-convex longitudinal cross-section and a triangular transverse cross-section. Flaking has been confined almost entirely to the edges of the keeled face, with no further attempt having been made to thin the piece. The preform measures 51 mm long, 23 mm wide at the shoulders, and 6 mm thick. Typologically, an affinity with the Langtry projectile point type (c.f. Bell 1958:44) is apparent.

Two biface fragments from the site are classifiable as knives. One is clearly identifiable as the midsection of an alternately beveled knife, and the other appears to be the same. The former, made of heat-treated gray chert, measures 25 mm wide and 9 mm thick; the latter, made of heat-treated pink chert, is 27 mm wide and 8 mm thick.

Two items have been classified as thin bifaces. One, made of pinkish fossiliferous chert, is the tip section of a projectile point or knife. It is plano-convex in longitudinal cross-section, with very little flaking on the ventral face. Retouching, but very little thinning, is present on its dorsal face. The artifact is 5 mm thick.

The other thin biface, made of heat-treated, red and gray banded chert, is little more than an ovate flake which has been bifacially flaked along the portions of its edges. Very little shaping, other than the creation of one pointed end, is evident.

One artifact was classifiable as a thick biface fragment. It is made of coarsely textured brown chert, and exhibits a rounded "tip" on its unbroken end. Limited bifacial flaking, with no evidence of retouch, is present on the specimen. It is 13 mm thick.

Two endscrapers were found. One is complete, the other lacks its proximal end. Both are plano-convex in longitudinal cross-section, and both are keeled. The complete specimen measures 44 mm long, 26 mm wide at its widest point, which is located through the midsection, and 18.5 mm thick at its most prominently keeled point. It is made of heat-treated, light pinkish colored chert. The other endscraper measures 20 mm wide and 11 mm thick. It is made of finely textured, heat-treated, light grayish colored chert.

Three retouched flake scrapers were found. Two are made of gray chert and one is made of heat-treated, pinkish colored, banded chert. All three are roughly shaped with crude and minimal unifacial flaking. The two gray specimens are complete;

the pinkish specimen lacks its proximal end. All three are keeled. The two complete specimens measure 43 and 54 mm long, 31 and 18 mm wide, and 10 and 12 mm thick, respectively; the incomplete specimen measures 23 mm wide and 10 mm thick.

Two retouched flakes, both heat treated, one of red field chert and one of pinkish white chert, were found. Very little shaping is evident on either of the two. The field-chert specimen, which is broken, exhibits careful retouch but it is of minor extent, with much of the fragment not having been worked at all. The other flake exhibits retouch along only one edge, with rougher flaking, or breakage resulting from utilization, along most of the rest of the flake's edges.

Ten utilized flakes were found. Two exhibit bifacial wear, and the remainder have unifacial wear, with three of the latter exhibiting concavities suggestive of their use as spokeshaves. Three of the group are fossiliferous gray chert; four of the others are heat treated.

One hammerstone was found. It is an oblong, hand-sized cobble made either of gray quartzite or a very coarse-textured chert. Slight battering is present along both ends.

A total of 23 pieces ofdebitage, including 19 waste flakes and four pieces of shatter, were recovered. The total includes one primary, four secondary, and 14 blank decortication flakes, and three secondary and one blank pieces of shatter. Five of the primary and secondary specimens were derived from field chert; the remainder exhibit limestone cortex. Approximately 30 percent of thedebitage appears to have been heat treated.

The faunal remains attributed to the two sites include human dentition, animal dentition and a bone fragment. None of the material is burned. The human dentition consists of one adult upper first molar. It is heavily worn on its occlusal surface, a condition indicative of old age and/or a diet heavy in grit. The animal remains include one tooth and seven tooth fragments, and one piece of bone. The dentition is identifiable as being derived from a bison or cow. The one bone fragment is small, but appears to be part of a long bone of a similarly sized animal.

To conclude, analysis of the material collected by the K.A.A. group from both 14CF355 and 14CF356 does not significantly alter the archeological status of either site. The only culturally diagnostic items, the projectile points, are generally in accord with the point types known to be associated with Pomona focus. The presence of the animal remains is somewhat more significant, since it indicates the possibility of subsurface faunal remains

being present at one of the two sites. Judging from the fact that a bisonlike tooth fragment was found at 14CF356 on a previous occasion while no such remains were found at 14CF355, it is quite likely that the material came from 14CF356, underscoring the possibility of investigative potential of that site. The human tooth is also significant, since it may indicate the presence of burials at one of the sites. However, judging from the fact that no other human skeletal remains were found, the tooth is likely a chance occurrence.

Site 14CF357

Site description

Reservoir location: At an elevation of 1040-1045 ft, in the flood control pool, in the Otter Creek Game Management Area.

Soil type: Verdigris silt loam.

Setting: 14CF357 is in the bottomland on the immediate right bank of Otter creek. The site covers an area approximately 100 X 150 m in size on a broad, low-lying alluvial ridge. It is bounded on the west and the north by the creek and on the south by a lightly forested minor drainage, an overflow channel of the creek. The drainage proceeds some 150 m to the east of the site before joining with a larger drainage which then flows north and empties into Otter creek. The movement of water in the smaller drainage has been impeded by the emplacement of an earthen dike located just south of the apparent center of the site. Several other prehistoric sites are located in the general area, including 14CF358, located to the southwest; 14CF353, to the southeast; 14CF47, to the northeast; and 14CF314, to the north.

Present conditions: The site is in a cultivated field, and has been adversely affected by cultivation, occasional flooding, and construction of the earthen dike. The site was flooded on several occasions during the field season. Construction of the earthen dike apparently involved the removal of an undetermined but probably substantial amount of soil from along the south central edge of the site, for use as fill in the dike. Consequently, the undisturbed cultural horizon in that area of the site has been truncated and is therefore much thinner, and at a lower "natural" level, than that encountered in the northern portion of the site.

Investigations

The site was visited on several occasions during the season, with seven days of rather intensive work being carried out as part

of the Kansas Archeological Training Program. The investigation consisted of pedestrian survey, the collecting of exposed archeological materials from the surface, the taking of numerous soil-core probes, the excavation of thirteen 60 cm^2 test pits, carried out by the present writer and his crew, and the excavation of twelve 2 m^2 excavation units, accomplished by Kansas Archeological Training Program enrollees under the direction of Society archeologists. The latter investigation was cut short by heavy rains and consequent flooding of the site. Fortunately, the excavations were adequately although not completely finished prior to that time.

The test pits were located in a loose grid pattern over the crest and slopes of the ridge, and were taken to depths ranging from 45-90 cm below surface. Excavation of the pits and the taking of soil-core probes revealed the presence of three distinct zones. The plow zone, containing artifactual material, faunal remains, burned limestone, burned earth and charcoal, extended a depth of 25-30 cm below surface. A second zone, an intact cultural zone containing a comparatively sparse amount of the same sort of material, was located immediately below and extended 55-60 cm below surface. This was generally underlain by sterile soil, but a thin, apparently noncultural third zone, lacking artifactual material but containing charcoal and burned earth flecking, was found in two pits at a depth of 45-55 cm below the plow zone, or around 70-80 cm below surface. That zone is assumed to represent the remains of a natural occurrence such as a prairie fire. Cultural remains at the site were found to be confined to the plow zone and the cultural zone immediately below it. In both those zones, the cultural remains were concentrated on the crest and southern slope of the ridge, to the northeast of the earthen dike.

While the results of neither the surface collecting nor the initial testing could be classified as spectacular, the testing did provide definite evidence of a partially undisturbed and apparently significant prehistoric component. With this latter fact in mind, a decision was made to undertake a more extensive excavation of the site utilizing the efforts of Kansas Archeological Training Program enrollees.

Consequently, a locational grid of 2 m^2 excavation units was laid out, and work began on five of the squares. Seven other units were eventually excavated, although some were not completed due to rain. Seven of the 12 units were situated in an east-west-trending checkerboard pattern across the crest of the ridge; the five other units were located on the southern slope of the ridge (see Figure 4). All units were excavated in arbitrary 15 cm increments, with most of the fill, including almost all the fill from below the plow zone, being screened through quarter-inch steel-mesh screen.

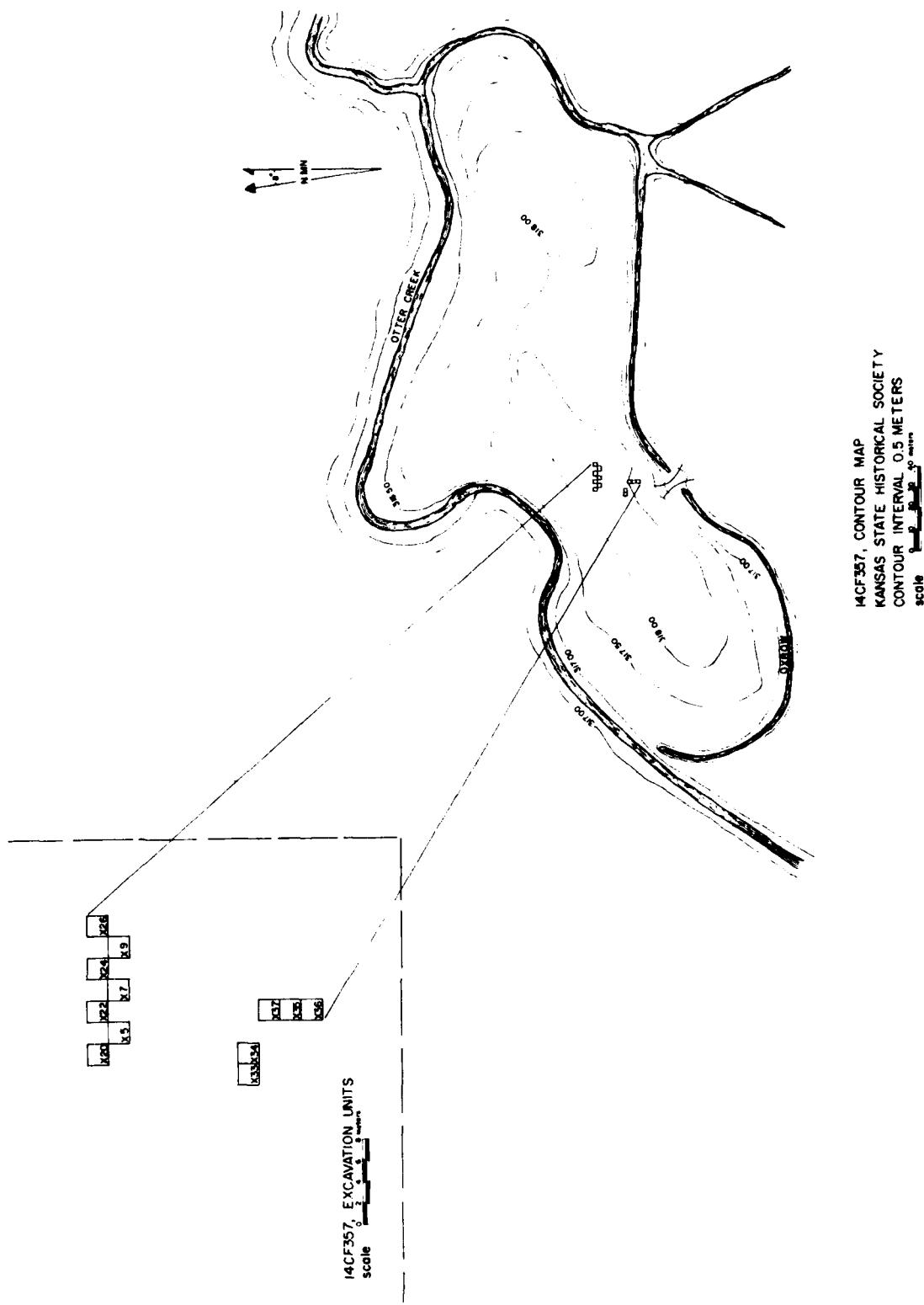


FIGURE 4. Map showing location of excavation units at 14CF357.

The excavations yielded very little more in the way of information than had been revealed in the initial testing. Artifactual material from below the plow zone was decidedly sparse, both absolutely and in comparison to the plow zone and surface inventory. No cultural features, and very few diagnostic artifacts, were encountered beneath the plow zone.

Archeological materials

The archeological materials encountered at 14CF357 consisted of a few historic and numerous prehistoric artifacts; faunal remains, including molluscan remains, the former being quite abundant and the latter scarce; daub and/or burned earth fragments; hematite fragments; charcoal flecking; a few pieces of sandstone; and several scattered chunks of burned limestone. From the surface of the site all prehistoric ceramic artifacts and lithic tools, all faunal and molluscan remains, and all hematite fragments were collected, along with a representative sample of the lithic debitage, daub and/or burned earth, and historic material. Excluding the uncollectible small burned earth and charcoal flecks, all archeological materials encountered both within and beneath the plow zone in the excavation units were collected.

Historic artifacts: Three historic artifacts, fragments of a clear glass container, were found.

Prehistoric artifacts: The prehistoric artifact inventory consists of several kinds of ceramic artifacts, a variety of lithic tools and debitage, and a few pieces of burned earth and/or daub. One mollusc shell fragment and an abundance of burned and unburned faunal remains were also found in prehistoric context beneath the plow zone.

Ceramic artifacts: Both pottery and burned earth and/or daub were found at the site. A total of five rim sherds and 89 body sherds were collected. The pottery sample can be differentiated into two groups, based on temper: one large rim sherd and six body sherds (7 percent of the total ceramic inventory), tempered with crushed shell; and four rim sherds and 83 body sherds, tempered primarily with indurated clay.

The shell-tempered sherds have a mixed provenience. The rim sherd was found at or just under the base of the plow zone in X24, and a body sherd which fits onto the rim sherd was recovered from the 30-45 cm level of the same excavation unit, well below the plow zone. Another body sherd was recovered from the same depth in adjacent square X9. Of the remainder, one body sherd came from the plow zone of X24, and three were recovered from the surface of the site.

The characteristics of the shell-tempered sherds are fairly uniform. Surface textures are fine, and cores are highly laminated.

Surface colors range from tan or light brown to dark brown, with cores being colored dark brown and gray. Both the interior and exterior surfaces of the sherds are plain. Morphologically, a vessel with a short (ca. 11-12 mm), vertical rim, clearly defined neck, and shallowly sloping shoulders is indicated by the rim sherd (see Plate 2,A). The lip is rounded, and approximately 4 mm thick. The rim, neck, and shoulder sections of the rim sherd measure 4.5 mm thick. The other body sherds are 2.5, 3.0, 3.5, 4.5, 6.5, and 7.5 mm thick, respectively. The thickest sherd varies from 4.0 to 7.5 mm in thickness, and is probably from the basal portion of the vessel. Decoration is found only on the rim sherd, where it is confined to the shoulder exterior. The decoration consists of two rather crudely executed, parallel, trailed lines, arranged in a wide, horizontally oriented, zigzag pattern. Typologically, the shell-tempered sherds exhibit the characteristics of the pottery produced by at least two cultural complexes of the late prehistoric period. More specifically, the relevant cultural complexes in closest proximity to the John Redmond area would include the Neosho focus, of northeastern Oklahoma (Wyckoff 1964:4, Wedel 1961:138), and Oneota aspect, found in eastern Nebraska and northeastern Kansas but concentrated in Iowa and Missouri as well as Wisconsin, Illinois, and southeastern Minnesota (Wedel 1961:117-119).

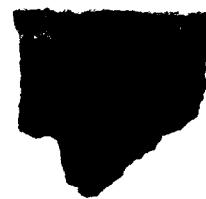
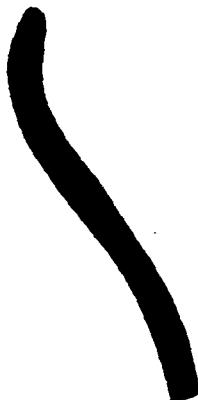
The indurated-clay-tempered sherds are, on the whole, identifiable as Pomona ware (c.f. Wilmeth 1970:29-33). At least 14 percent of the 87 sherds contain small, sparse inclusions of hematite, which may be naturally occurring within the clay. However, the presence of a few small, unworked hematite fragments at the site suggests the possibility that the inclusions were deliberately added.

The surface textures of the sherds are fine. Core textures range from laminated to contorted. Surface colors range from orangish tan and tan to dark brown, and the cores range from tan to gray in color. The exterior surface treatment consists in the main of cord roughening, vertically oriented on the four rim sherds and three neck sherds. The cord employed in producing the impressions was fine to medium gauge in size and on six sherds, was discernible as having an S-twist. The cord roughening on a few of the sherds seems to have been partially smoothed, although this effect may in some cases be due in part to erosion. The interiors of the sherds are predominately plain, and several are rather lumpy. Two or three of the sherds appear to have been scraped or wiped on their interiors.

Morphologically, only the rim sherds and neck sherds are informative. The latter indicate that the vessels from which they were derived had fairly well-defined necks. None of the rims (see Plate 2,B-E) exhibit neck junctures, but their extant rim heights are 28, 17, 29, and 32 mm, respectively. All four rim sherds are straight but appear to be slightly insloping.



A



B



C



D



E



PLATE 2. Selected ceramic artifacts from 14CF357.

Lips on the two undecorated rim sherds (Plate 2,B and C) are flattened, and measure 7 and 5.5 mm thick, respectively. Those two sherds expand to maximum thicknesses of 8 mm and 6 mm, respectively. The two decorated rims have maximum thicknesses of 7.5 mm and 6 mm, respectively, and have thicker lips due to their kinds of decoration. The body sherds range in thickness from 4-11.5 mm, with an average of 6.7 mm.

Decoration of the clay-tempered sherds is confined to the lips of two of the four rim sherds. In one case (Plate 2,D), a rounded dowel-like tool was applied at an oblique angle to the exterior edge of the lip, forcing the clay inward and upward, creating a crenellated effect. The extant impression is 4-5 mm in diameter. Spacing of the impressions is not evident due to the small size of the sherd and the presence of only one impression.

The other decorated sherd (Plate 2,E) is also rather small and uninformative. The apparent decorative element on this sherd is a pointed, slightly outwardly projecting node, approximately 10 mm wide and 8 mm thick, which rises upward and outward from the rim and comprises the lip of the vessel. No tool impressions or any other types of decoration are evident. The rim is 6 mm thick.

In terms of provenience, only four of the clay-tempered sherds were apparently recovered from below the plow zone. All the others were found on the surface or in the plow zone.

In addition to the pottery, a total of 125 pieces of burned earth and/or daub was recovered. Of the total, 83 percent came from the plow zone of X37. Three pieces came from below plow zone. The pieces ranged in color from orangish tan and tan to dark brown and gray, but were uniformly small in size, many about the size of a pea. Approximately half of the total, though weathered, exhibited grass and/or twig impressions and can be considered to be daub, i.e., structural remains.

Lithic artifacts: The lithic artifact inventory consists of chipped-stone tools anddebitage, including projectile points, knives, endscrapers, an axe or chopper, bifaces, unifaces, retouched and utilized flakes, and two cores. In terms of provenience, only two projectile points, one retouched flake, and 22 percent of the debitage were reportedly found definitely beneath the plow zone.

Projectile points: The projectile points can be divided into three categories: small, thin, plain, triangular points; small, thin, corner-notched points; and medium-sized, side-notched, concave-based points.

The plain triangular points (Plate 3,A-D) are all rather elongated in shape, with subconcave bases. Four specimens were found, but only one is complete; three are lacking their tips. The complete specimen was recovered from below plow zone in X26; all the rest are from the surface of the site. The complete specimen, made of fossiliferous gray chert, measures 22 mm long, 12.5 mm wide at the base, and 3 mm thick. The other points include one of grayish brown chert, 12 mm wide and 3.5 mm thick, with an estimated length of 24 mm, one of white chert, 14 mm wide and 3.5 mm thick, with an estimated length of 27 mm, and one of heat-treated, fossiliferous gray chert, 12.5 mm wide and 3 mm thick, with an estimated length of 30 mm. Typologically, these points are identifiable as representatives of the Madison or Fresno projectile point types (c.f. Perino 1968:52, and Bell 1958:44, respectively).

One other artifact, made of gray chert, is recognizable as the midsection of a small, thin, triangular projectile point. It was not possible to determine from the extant portion, however, whether or not the point was notched. The fragment is 3 mm thick.

A small, thin, and apparently corner-notched projectile point (Plate 3,E) was recovered from below plow zone in X24. It is made of white chert. The stem or base and a very small portion of the tip are missing from the artifact, which is 3 mm thick. The blade of the point has a maximum width of 11.5 mm and an estimated length of 21 mm. The extant portion of the stem is 7 mm wide. Typological affinities are uncertain due to the lack of a stem or base, but the artifact is most likely a representative of the Scallorn projectile point type, or alternately, one of the late prehistoric side-notched varieties.

The single medium-sized, side-notched, concave-based projectile point (see Plate 3,F) is made of heat-treated, coarsely textured, fossiliferous gray chert. The tip and a large portion of the midsection of the artifact are missing, but the point appears to have been lanceolate or at least subtriangular in shape, with more or less parallel sides. The basal and lateral edges of the stem are slightly ground. The point has a maximum blade width of 22 mm, a stem width of 14 mm, and a basal width of 21 mm, and is 6.5 mm thick. The estimated length is around 50-52 mm. Morphologically, the artifact bears a resemblance to the Logan Creek projectile point type found in Archaic context in eastern Nebraska and western Iowa (c.f. McKusick 1964:57 and Figure 4.1,D).

Knives: Two bifacially flaked artifacts from the site were classifiable as alternately beveled knife fragments. One, made of gray

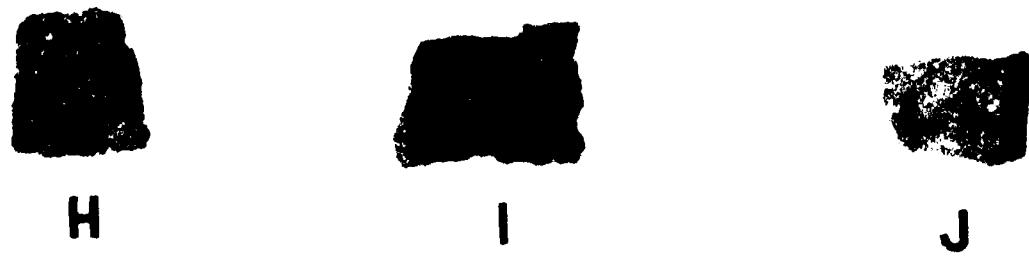
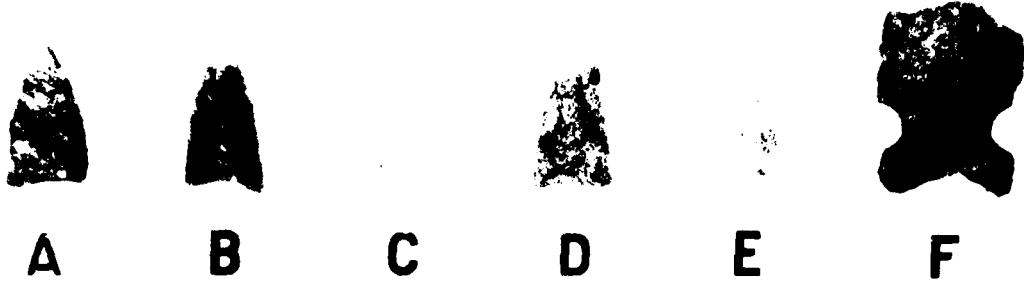


PLATE 3. Selected lithic artifacts from 14CF357.

chert, consists of the tip section, or one end, of a knife which may have been diamond shaped. The triangularly shaped fragment is 7 mm thick and has a maximum width of 23 mm. The other knife fragment, made of fossiliferous, bluish gray chert, is a large, crudely flaked midsection with slightly convex, fairly parallel edges. It is 9 mm thick and 45 mm wide.

Axe or chopper: One large, thick, broadly side-notched, ovately shaped biface (Plate 3,G), made of tan, banded chert with limestone cortex, was found at the site. Although bifacially flaked, the piece is more or less plano-convex in longitudinal cross-section. Wide, shallow side notches are present, possibly for use in hafting. The wide end of the artifact is subconvex in shape and the opposite end is convex. The artifact has a maximum thickness of 31 mm, a maximum width of 97 mm, and a total length of 112 mm. Functionally, the artifact may be an axe, a chopper, or possibly even a hoe. In connection with the latter possibility, however, no polish is present, thus casting doubt on this interpretation.

Bifaces: A total of 11 bifaces was recovered from the site. Five of the group, two of fossiliferous, gray chert, one of finely textured white and gray banded chert, and two of heat-treated, mottled, pink and gray-colored chert, are thick and crudely flaked fragments, little more than test pieces. Of the remaining six bifaces, one is the midsection of a projectile point or knife made of grayish brown chert. It is 17 mm wide and 5.5 mm thick. Two of the others have beveled edges, although the beveling is not particularly pronounced, and may be fragments of alternately beveled knives. One, made of mottled, gray and white chert, is a midsection, 7 mm thick and 25 mm wide; the other, made of heat-treated, finely textured, pink and gray chert, is a tip section, 6.5 mm thick. One other biface, 6 mm thick and made of finely textured, heat-treated, mottled, orange chert, is a finely retouched fragment of an unidentifiable bifacial tool.

The two remaining bifaces of the group, along with a retouched flake, have been singled out for special consideration since they bear a striking morphological resemblance to gun flints of the early historic period, both the mass-produced European varieties described by White (1979) and those made in Kansas by various tribal groups and now in the Society's collections. The 14CF357 specimens, except for the unifacially retouched flake, differ from them mainly in being bifacial rather than unifacial. And since the three were all found in the plow zone, it is likely that they represent a historic Native American or Euro-American component. Indeed, it is only the lack of corroborating historic material at the site (i.e., glass trade beads, metal objects, etc.) that prevents a positive identification of these artifacts as gun flints. Moreover, it is difficult to imagine what functional purpose they might have been used for, if not as gun flints.

Only one of the two bifacial specimens is complete. Made of fossiliferous, gray chert, the artifact is 7 mm thick and has a trapezoidal shape (see Plate 3,H). It has a length of 23.5 mm, a maximum width of 22.5 mm, and a minimum width of 18 mm. Neither face is flat; both are slightly convex. The other bifacial specimen (Plate 3,I) is lacking only portions of one corner. Made of finely textured, mottled, gray and brown chert, the artifact has a maximum thickness of 10 mm and has a rectangular shape, approximately 29 X 24 mm in size. The piece has been only slightly worked, primarily along its edges. One face, apparently the ventral face of the original flake, is flat, or nearly flat; the other face is slightly and asymmetrically keeled. The other possible gun flint, the retouched and/or utilized flake (Plate 3,J), is complete. It is made of finely textured, mottled, tan and white chert. It is 7.5 mm thick and has a more or less rectangular, slightly trapezoidal shape approximately 23 X 17.5 mm in size. One face is flat and the other is prominently keeled. The artifact appears to have been lightly retouched along one of its short edges, with slight utilization wear or breakage being present on the opposite face along the same edge. The general characteristics of this artifact are quite similar to those of gun flints manufactured in Europe by means of the blade technique (c.f. White 1979:406-409 and Figure 4, A-B).

Endscrapers: A total of nine plano-convex, snubnosed endscrapers were recovered from the site. Only six are complete; the three others lack their proximal ends. The artifacts were derived from a variety of chert sources. Four were made of fossiliferous, gray chert, and one of those exhibits limestone cortex. Two of the others are tan chert; one other is heat-treated, fossiliferous pink chert; another is gray and white-banded chert with limestone cortex; and the last is mottled, gray and white chert. Morphologically, the scrapers range from very small to medium in size. The smallest is 27.5 mm long, 14 mm wide at the bit, and 5.5 mm thick; the largest measures 50 mm by 25 mm by 9.5 mm. Most of the group are rather small. Six of the nine are keeled. Four exhibit concavities along one of their lateral edges and may have been used as spoke-shaves.

Unifaces: Two large, unifacially retouched flakes from the site are classifiable as unifaces. One, made of fossiliferous, bluish gray chert, is circular in shape, with one broken end. All unbroken edges of the artifact are retouched. The other, made of heat-treated, pinkish white chert with reddish limestone cortex, is retouched along two of its longest edges and has one unifacially retouched concavity suggestive of use as a spokeshave.

Retouched flakes: A total of 14 retouched flakes were recovered from the site, one from below plow zone. A variety of cherts are represented, and approximately 50 percent of the group appears to have been heat treated. Three of the group are more specifically categorizable as retouched flake scrapers, and one other exhibits

two prominent concavities suggestive of use as a spokeshave. The majority, however, appear to be little more than test pieces or, at best, small sidescrapers.

Utilized flakes: A total of seven utilized flakes were found at the site. Three of the group appear to have been heat treated. All the flakes exhibit minor unifacial utilization wear along portions of their unbroken edges.

Cores: Two cores were discovered at the site. One is the remnant of a field-chert cobble; the other is made of finely textured, possibly heat-treated, grayish white chert. Both cores are irregularly shaped.

Debitage: A total of 236 pieces of debitage, including 211 waste flakes and 25 pieces of shatter, was recovered from 14CF357. Fifty-one pieces, or 22 percent of the total, were recovered from below plow zone in the test pits and excavation units. In terms of decortication, the debitage included 15 primary, 44 secondary, and 152 blank decortication flakes, and three primary, 11 secondary, and 11 blank pieces of shatter. The overwhelming majority of the primary and secondary specimens displayed field-chert cortex. Approximately 46 percent of the debitage appeared to have been heat treated.

Hematite: Eight unworked pieces of hematite were found at the site, three from below plow zone in adjacent squares X26 and X9. All are small and angular. The largest is roughly thumbnail-sized.

Faunal remains: A total of 697 animal remains and one mollusc-shell fragment were recovered from 14CF357, including 670 bones and bone fragments and 27 teeth and tooth fragments. Approximately 53 percent of the remains were recovered from below plow zone in the excavation units. The majority of the material is quite fragmentary. Three teeth and one bone, the sesamoid of a large animal such as a bison, elk or deer, are more or less whole. Nineteen percent of the bone, but none of the teeth, had been burned. The bone consisted almost entirely of very small, broken fragments.

In terms of animal species represented by the remains, the material can be categorized both specifically and generally. A few of the remains, including one mole humerus, two rodent mandibles, one rodent incisor, one small animal vertabrate, one tooth, and nine bone fragments derive from small animals which may not have been directly connected with the prehistoric occupation. Animals which were or may have been exploited are represented by a beaver tooth, three turtle carapace fragments, and a whole host of material identifiable generally and in some cases more specifically as bison, deer or antelope.

Bison was by far the best represented species. The remains which can be confidently identified specifically as bison include one fragmentary axis vertebrae, one unidentifiable vertebral fragment, one metapodial proximal end, one metapodial distal end, two carpals or tarsals, three phalanx, and three teeth. The remains definitely attributable to deer or antelope consist of one bone fragment, the distal end of a left humerus. The bulk of the rest of the large animal remains were not identifiable as to species and could belong to elk, deer, or antelope as well as bison. These remains include 112 long-bone fragments, eight epiphyseal elements of long bones, 17 rib fragments, seven scapula fragments, two metapodial distal end fragments, one sesamoid, one vertebral fragment, one petrous section of a skull, and assorted bone and tooth fragments.

One very eroded, unburned shell fragment was also found at the site, below the plow zone in X9.

Summary and conclusions

14CF357 is identifiable as representing the remains of an historic Euro-American farmstead and/or dump, and the remains of a prehistoric habitation site attributable to the Pomona focus of the Middle Ceramic period. The historic component is in general quite sparsely represented and probably the result of chance deposition of artifacts rather than an actual occupation. The possible gun flints suggest that an occupation, whether by Native Americans or Euro-Americans, may have taken place, but its historical significance is uncertain.

The prehistoric component is well represented, in both primary and secondary archeological context, by diagnostic ceramic and lithic artifacts and other such artifactual evidence, and an abundance of burned and unburned crushed faunal remains. Investigation of the site produced a variety of archeologically significant data. Evidence of hearths was found, in the form of scattered chunks of burned limestone, along with structural remains, in the form of small pieces of grass-impressed fired-clay daub, indicating that a relatively intensive occupation took place. The recovered faunal remains are informative in that they reveal that bison, especially, along with elk, deer, or antelope, and possibly beaver or turtle, were exploited by the Pomona inhabitants. The shell-tempered sherds found at the site, although few in number, indicate trade or some other form of contact between the Pomona group and Mississippian groups from outside the area, probably of Oneota or Neosho focus cultural affiliation.

14CF357 has been adversely affected by cultivation and occasional flooding, and by earthmoving along its southern edge. The 1979 investigation resulted in the recovery of archeologically significant data, and portions of the prehistoric component still remain in an undisturbed condition beneath the plow zone. Future excavations, however, would

likely add little to what has already been learned. The site can thus be regarded as having little or no scientific significance, since it appears to have a very low potential for the yielding of any further archeologically significant information.

Site 14CF358

Site description

Reservoir location: At an elevation of 1040-1050 ft, in the flood control pool, in the Otter Creek Game Management Area.

Soil type: Verdigris silt loam.

Setting: 14CF358 is in the bottomland on the immediate right bank of Otter creek. The site covers an area approximately 75 X 75 m in size on a broad alluvial knoll bordered on the west by the creek and on the north and south by minor tree-lined drainages. A limestone ford is present in the creek just west of the site.

Present conditions: The site is in a cultivated field, and has been adversely affected by the effects of cultivation and occasional flooding. The site was flooded on several occasions during the 1979 field season.

Investigations

The site was visited twice during the summer. The investigation consisted of pedestrian survey and the collecting of exposed archeological materials from the surface.

Archeological materials

The archeological materials encountered at 14CF358 consisted of prehistoric ceramic and lithic artifacts, burned earth, and a very few small chunks of burned limestone. The latter were located along the northern edge of the site. All artifacts and burned earth fragments were collected, but the limestone was left at the site.

Ceramic artifacts: The ceramic artifact inventory includes one neck sherd and four body sherds, all of which are tempered with indurated clay. Surface textures of the sherds are fine; the cores are laminated to compact. Surface colors ranged from tan and brown to gray, cores were the same. The surface treatment consists of plain interiors and cord-roughened exteriors. Judging from the one neck sherd, the cord roughening was vertically oriented. Morphologically, a sharply defined neck is indicated by the neck sherd; otherwise, the sherds are basically uninformative. The sample ranged in thickness from 4-7 mm, with an average of 6 mm.

Lithic artifacts: The lithic artifact inventory consists of a projectile point, three thin bifaces, retouched and utilized flakes, cores and core remnants, and debitage.

The projectile point is incomplete, lacking the tip and a large part of the midsection. It is small, thin, and triangular, with a single (extant) side notch and a basal notch. The remaining portion of the point has straight sides and a subconcave base. It is made of heat-treated, mottled, orange and pink-colored chert, and measures 15 mm wide at the base and 2.5 mm thick. Assuming that only single side notches were present on the complete point, a typological affinity with the Harrell projectile point type (c.f. Bell 1958:30) can be seen.

Three thin bifaces were found. One of these appears to be the basal corner section of a small, plain, triangular projectile point; the other two appear to be preforms for the same sort of projectile point. The former of the three is made of heat-treated, pinkish white chert. It has a straight base and side, and is 2.5 mm thick. Assuming it was unnotched when complete, an affinity with the Fresno projectile point type (c.f. Bell 1960:44) is apparent.

The second of the three thin bifaces is made of heat-treated, mottled, orange and pink-colored chert. A small bit of the tip is missing. The artifact is small, thin, and triangular in shape, with slightly convex sides and an unfinished base. One face is completely retouched except for the base, while the other face, apparently the ventral face of the original flake, is retouched only along the edges. The artifact is 15 mm wide at the base and 3.5 mm thick; the length is estimated at 23.5 mm. Assuming it would not have been notched when further worked, this thin biface can be classified as a preform for a projectile point of the Fresno type (c.f. Bell 1960:44),

The third of the thin bifaces is made of fossiliferous gray chert, and is lacking its tip. The artifact is medium sized, with an elongated triangular shape. The sides are straight; the base is slightly convex. Retouch is minimal, with some thinning remaining to be undertaken on the edges and midsection. It has a basal width of 20.5 mm, a thickness of 5 mm, and an estimated length of approximately 53 mm. Assuming that the artifact would not have been notched when further worked, it can be regarded as a preform for, or a relatively unfinished example of, a projectile point of the Madison type (c.f. Perino 1968:52).

Six retouched flakes and three utilized flakes were recovered from the site. Two retouched flakes are of fossiliferous gray chert, one is of heat-treated, fossiliferous, pinkish white chert, and three are of heat-treated, pink and red banded chert. One of

the retouched flakes may possibly be the midsection of an endscraper, and another exhibits a concavity along one edge suggestive of use or intended use as a spokeshave. The other retouched flakes are relatively unshaped. On all six flakes, retouch is confined only to portions of their edges. Three utilized flakes, one of gray chert and two of heat-treated, pink and gray colored chert, were found. Two exhibit unifacial utilization wear, and one exhibits bifacial wear.

Two cores and two core remnants were collected at the site. One is made of field chert, one of fossiliferous gray chert, one of finely textured white chert, and one of finely textured, heat-treated, pinkish white chert. All are irregularly shaped.

A total of 26 pieces of debitage, including 23 waste flakes and three pieces of shatter, was taken from the site. The total includes four secondary and 19 blank decortication flakes, and one primary and two blank pieces of shatter. All primary and secondary specimens were derived from field chert. Six specimens, or approximately 23 percent of the total, appear to have been heat treated.

Burned earth: One small, irregularly shaped piece of burned earth was discovered at the site. It contains a few small inclusions of indurated clay. No grass or twig impressions are observable on the surface of the specimen.

Summary and conclusions

14CF358 is identifiable as representing the remains of a prehistoric camp site, attributable on the basis of diagnostic ceramic and lithic artifacts to the Pomona focus of the Middle Ceramic time period. No structural remains were encountered at the site, but indications of hearths were found in the form of buried limestone and burned earth.

The site has been adversely affected by cultivation, but its bottomland location and the presence of burned limestone and burned earth suggests that buried remains, specifically hearths, may be present. Testing will be necessary to determine the scientific significance of the site.

Site 14CF359

Site description

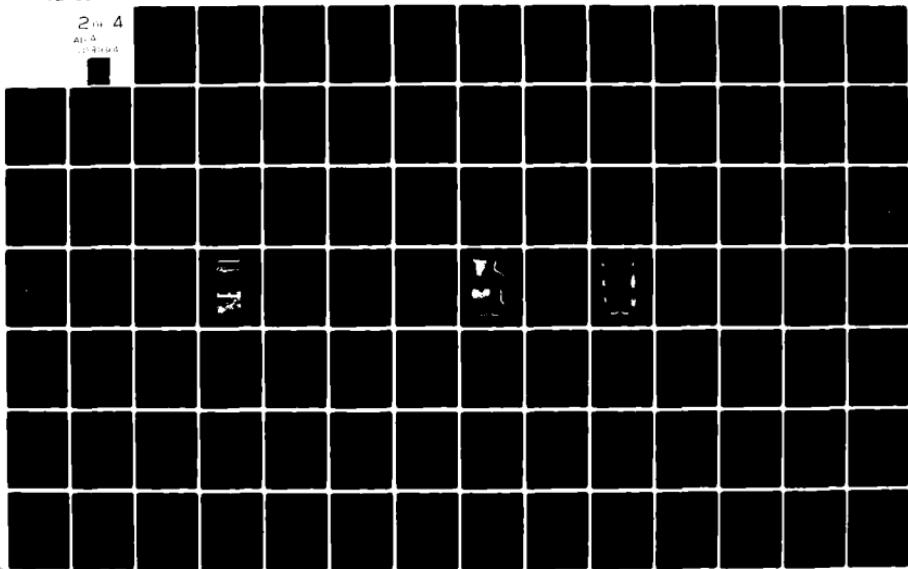
Reservoir location: At an elevation of 1045-1055 ft, in the flood control pool, in the Otter Creek Game Management Area.

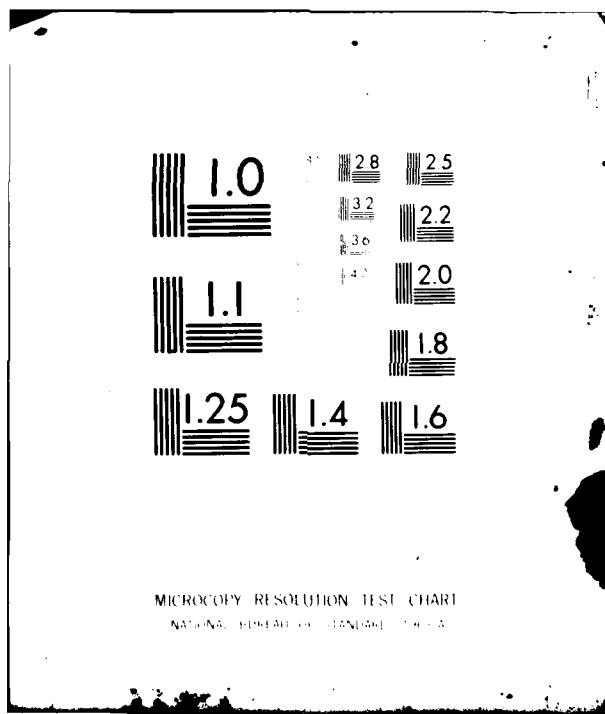
Soil type: Lanton silty clay loam.

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ARCHEOLOGICAL INVESTIGATIONS AT JOHN REDMOND RESERVOIR, EAST CE--ETC(U)
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MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS 1963

Setting: 14CF359 is in the bottomland on the immediate left bank of Otter creek. The site covers an area approximately 50 X 50 m in size on the crest and the southern and eastern slopes of an alluvial ridge. It is bordered on the east by Otter creek, on the north by an east-west-trending gravel road leading to the remains of an abandoned bridge, and on the south and west by a minor tree-lined drainage which flows south and east into Otter creek.

Present conditions: The site is in a cultivated field, and has been adversely affected by cultivation, occasional flooding, and the construction of farm buildings during the historic occupation.

Investigations

The site was visited twice during the summer. The investigation consisted of pedestrian survey and the collecting of exposed archeological materials from the surface.

Historical research revealed that a building was present at 14CF359 in 1878. The land, and presumably the building, was owned by a J.N. Martin (Edwards Brothers 1878:53).

Archeological materials

The archeological materials encountered at 14CF359 consisted of historic and prehistoric artifacts, and small slabs of burned and unburned limestone, assumedly historic structural remains. The limestone was scattered across the site but was located primarily on the eastern slope of the ridge. The limestone and most of the historic material was left at the site, but all prehistoric artifacts and a representative sample of the historic artifacts were collected.

Historic artifacts: The historic artifact inventory consists of ceramics, glass, and metal fragments. Only one metal artifact, a square nail, was collected. An equally small collection of the glass was made: one clear, light turquoise-colored glass fragment, apparently the neck and rim section of a cork-type bottle.

The ceramic artifact inventory is somewhat more varied. The inventory includes a section of an Albany-glazed stoneware strap handle; one Albany-glazed stoneware rim sherd; one stoneware body sherd with an Albany-glazed interior and a salt-glazed exterior; one earthenware body sherd with brown lead glaze; one stoneware body sherd with an incompletely fired red slip glaze; one stoneware basal sherd with an Albany-glazed interior and a salt-glazed exterior, and one stoneware basal sherd with a butterscotch-colored glaze.

Prehistoric artifacts: The prehistoric artifact inventory consists entirely of lithic material: one small biface fragment, one core, and debitage, all of chert. The biface fragment is made of heat-treated, pinkish gray chert. It is a small, thick, relatively unworked, generally uninformative fragment. The core is made of fossiliferous gray chert and is the remnant of a small field-chert cobble. It is somewhat slab shaped and is irregularly flaked, little more than a very large secondary decortication flake from which a few flakes have been struck. A total of 40 pieces of debitage, including one primary, five secondary, and 34 blank decortication waste flakes, was found. The primary decortication flake and two secondary flakes were derived from heat-treated, red field chert; the remainder of the debitage represents the same fossiliferous gray chert as the one core found at the site. Most of this debitage was found on the eastern slope of the site.

Summary and conclusions

14CF359 is identifiable as representing the remains of an historic Euro-American farmstead and/or dump possibly derived from the J.N. Martin farming operation of the 1870s, and the remains of a prehistoric camp site of indeterminate age and cultural affiliation. The prehistoric component may be nothing more than the remains of a short-term repair station. The paucity of artifacts and the absence of ceramics argues against an interpretation of an intensive prehistoric occupation. No prehistoric structural remains were found at the site, but historic structural remains, in the form of scattered slabs of burned and unburned limestone, were relatively abundant.

The site has been adversely affected by cultivation, and the prehistoric component has undoubtedly been damaged to some degree by the digging of the historic building foundations. Nevertheless, due to the bottomland location of the site it is possible that buried remains may exist. Testing will be necessary to determine the scientific significance of the site.

Site 14C.360

Site description

Reservoir location: At an elevation of 1040-1050 ft, in the flood control pool at the edge of the conservation pool.

Soil type: Dennis silt loam.

Setting: 14CF360 is in the uplands above the former left bank of the Neosho river. The site covers an area approximately 150 X 150 m in size. It is situated along the edge of a broad, ill-defined

point of land along the edge of the reservoir, part of a broad bench extending out from higher uplands located some 250-400 m to the northeast. The site is bordered on the southwest by the conservation pool and on the immediate southeast by a slough, now a very shallow cove of the reservoir. A similar slough or cove is located approximately 200 m to the northwest of the site.

Present conditions: The site is in a fallow field and is covered by grass, weeds, and small trees except where it has been eroded along the shoreline. A north-south-trending treeline runs through the western half of the site. The field was cultivated in the past, and the site is presently being severely affected by water erosion. Wave action has stripped away the top soil along the edge of the conservation pool, leaving a wide clay beach and exposing and washing artifacts out of situ. The alluvial action has also resulted in the deposition of varying amounts of silt, modern debris, and driftwood across the site. Driftwood has on at least one occasion been pushed into piles and burned off by project employees, disturbing the surficial artifact distribution and creating burned earth, thus confusing the archeological situation.

Investigations

The site was visited on four occasions during the season. The investigation consisted of pedestrian survey, the collecting of artifacts from the surface, the taking of six soil-core probes, and the excavation of two 1 X 2 m rectangular test pits which were dug to a depth of 60 cm below surface. The pits were located 20 m east of the treeline, one pit approximately 50 m north of the conservation pool level and the other one 50 m north of the first. They were shoveled in 5 cm increments, with half of the removed fill being screened through steel-mesh screen. No artifacts or any other cultural remains were found in the pits, which revealed the presence of a thin plow zone. Both the shovel tests and the soil probes revealed that the plow zone becomes progressively thinner and finally nonexistent as one moves from the uplands towards the reservoir.

Archeological materials

The archeological materials encountered at 14CF360 consisted of historic and prehistoric artifacts, burned earth and/or daub, unworked field chert, and scattered chunks of red sandstone and burned and unburned limestone. All prehistoric ceramic artifacts and lithic tools were collected, along with a representative sample of the lithic debitage, historic artifacts, and the burned earth.

Historic artifacts: One stoneware basal sherd was collected. It has an Albany-glazed exterior and interior.

Prehistoric artifacts: The prehistoric artifact inventory consists of ceramic remains and both chipped and ground stone.

Ceramic artifacts: One rim sherd and one body sherd were found. The sherds differ in their decoration and tempering and will therefore be discussed separately. The rim sherd is lacking its neck and almost all its lip, and is badly spalled as well. It is tempered with crushed burned bone. The surface textures are fine to medium coarse and the core is crumbly. The color of the surface and the core is a uniform dark brown. The surface treatment includes a plain interior. The exterior of the sherd is spalled off except where decorated, but the extant surface is plain. The rim sherd is decorated with a 17 mm wide band of parallel, thinly incised lines, spaced 2 mm apart and oriented in a nearly vertical, right-oblique direction. The band begins at the lip and is bordered along the bottom by a horizontally oriented trailed line about 3 mm wide. The decorated portion of the sherd is very slightly horizontally convex. Below the trailing, unfortunately, the exterior of the sherd is spalled off. The morphology of the original vessel is uncertain from the evidence at hand but the sherd is 8 mm thick. Typological affinities of the sherd are uncertain. The zoned, incised and trailed decoration of the sherd is strongly reminiscent of Middle Woodland, Cuesta or Kansas City Hopewell pottery wares. The bone tempering is commonly associated with Middle Ceramic cultural manifestations, but has been found in association with sand tempering in the small Hopewellian pottery sherd sample recovered from Early Ceramic, Greenwood phase context at the Gilligan site in John Redmond (Jones and Witty 1980:84)

Taking this into account, it is interesting to note that the one body sherd from 14CF360 has sand as its primary tempering agent, along with a very small amount of crushed burned bone. The two sherds are remarkably similar in terms of color and texture and could in fact represent portions of the same vessel, a vessel with two unevenly distributed tempering agents, sand and bone. The surface treatment of the body sherd consists of a plain interior and an apparently lightly cord-roughened exterior surface created with the use of fine-gauge, Z-twist cord. However, the cord markings seem to be irregularly arranged in narrow, dentate-like lines or bands and may represent cord-wrapped-stick impressions such as were present on the base of a Verdigris ware vessel section collected from another John Redmond site, the Salb site, 14CF331 (Schmits 1980b:129-132, Witty 1961: Plate 4,E). Not surprisingly, the 14CF360 sherd is relatively thick, ranging from 9-11.5 mm in size, and the rapid thickening of the sherd suggests it to be a basal section. The exact typological affiliation of the sherd is uncertain, but its tempering and to an extent its surface treatment suggest that it dates from the Early Ceramic period.

Lithic artifacts: The lithic artifact inventory includes both chipped-stone and ground-stone tools and debitage. The chipped-stone category includes projectile points, bifaces, a drill, a retouched flake scraper, a retouched flake, utilized flakes, cores, debitage, and a hammerstone. The ground stone consists of two sandstone abraders.

Six chipped-stone projectile points, of varying degrees of completeness, were found. Three are of the small, plain, triangular variety, two are stemmed, and one is side notched. The former category includes one nearly complete specimen which lacks only its extreme tip, and two half-complete specimens which lack their tips and portions of their midsections. The first, made of mottled white chert, measures 15 mm wide at the base, and 3 mm thick, with an estimated length of 22 mm. The latter two points measure 13 mm and 17 mm wide at the base, and 2.5 mm and 4 mm thick, with estimated lengths of 27 mm and 24 mm, respectively. One of the two is made of heat-treated, pinkish white chert and the other is made of dark gray chert. Typologically, these points share the characteristics described for the Fresno or Madison projectile point types (c.f. Bell 1960:44, and Perino 1968:52, respectively).

Of the stemmed points, one is complete; the other consists of only a portion of the stem of the point. The complete specimen is made of fossiliferous gray chert, and is subtriangular in shape with a straight to slightly expanding stem formed by corner notching. The stem has a subconvex base. The point appears to have been resharpened, with slightly concave sides leading to a narrow, attenuated tip. One barb is prominent but rounded; the other was apparently broken off and resharpened and is even more rounded than the other. The point is 33 mm long, with a blade length of 22 mm and a stem length of 11 mm. A shoulder width of 23 mm, a stem width of 14.5 mm and a basal width of 15 mm were observed. The point has a maximum thickness of 6.5 mm. Typologically, an affinity with the Ellis point type (c.f. Bell 1960: 32) seems most likely; the point is also similar to, but smaller than the norm described for, the Palmillas type (c.f. Bell 1960:74).

The other stemmed projectile point consists of a portion of the stem of a wide, expanding-stemmed point. The stem, made of heat-treated, violet and gray banded chert, has a subconvex base. The fragment is 6 mm thick. Neither stem width and length, nor typological affinities, could be determined from the evidence at hand.

The one side-notched projectile point is lacking only its tip. The point, made of heat-treated, red and tan colored chert, is subtriangular to slightly lanceolate in shape with a subconvex-

sided blade, wide side notches, and a subconcave base. The point is 5.5 mm thick and has a shoulder (barb) width of 21.5 mm, a stem width of 13 mm, and a basal width of 20 mm. The stem is 8 mm long; the point has an estimated total length of 38 mm. The artifact bears some morphological resemblance to the Logan Creek projectile point type (c.f. McKusick 1964:56-58) of the eastern Nebraska and western Iowa Archaic but is not firmly identifiable typologically as such.

Three bifaces were found at the site. One is the tip section of a projectile point or knife; another is a midsection, presumably from a projectile point or knife; and one is a large, crudely flaked piece. The tip section is 5 mm thick, from 9-12 mm in length, and 20 mm wide at the point of breakage. It is made of mottled, brown and gray colored chert. The midsection is 7 mm thick, and made of fossiliferous gray chert, but is otherwise uninformative. Both the tip and the midsection are retouched along their edges. The third and largest piece is 39 mm wide and 10 mm thick, with straight, parallel sides, a subconvex base, and one broken end. All its unbroken edges are crudely flaked with no evidence of retouch. It is made of heat-treated, pink and gray colored chert.

The midsection of a drill was also recovered at the site. Made of gray, banded chert, the fragment has a lozenge-shaped transverse cross-section. The artifact is 10.5 mm wide and 8 mm thick, but is otherwise uninformative.

Two retouched flakes and three utilized flakes were found. One of the former is classifiable as a retouched flake scraper. It is made of finely textured white chert. The artifact is broken at one end, but displays a steeply retouched bit on the other. The keeled scraper is 20 mm wide, and 5 mm thick. Breakage from hafting or utilization is present on one later edge. The other retouched flake is made of heat-treated, pink and gray colored chert. The flake displays unifacial retouch along one subconcave edge, and unifacial utilization wear along the opposite edge. Three utilized flakes were recovered. All three are heat treated, two of pink and gray banded chert and one of gray chert. All three exhibit unifacial utilization wear along one of their edges.

Three cores were taken from the site. All three are remnants of field-chert cobbles. Two are small, expended pieces, and one is a large, fist-sized, heat-treated specimen.

A total of 95 pieces ofdebitage, including 87 waste flakes and eight pieces of shatter, were retrieved from the site. The total includes four primary, 11 secondary, and 72 blank decoration flakes, and one primary, two secondary, and five blank

pieces of shatter. All of the primary and secondary specimens were taken from field-chert cobbles. Approximately 27 percent of the total appeared to be heat treated.

One hammerstone was found at the site. An irregularly shaped field-chert cobble, it exhibits battering on several of its more prominent protuberances.

Ground stone: Two sandstone abraders were found at the site. Both are made of dense, reddish tan sandstone. One is a small fragment with a single, straight, V-shaped groove running across one face. The other abrader is much larger, a slab of rock approximately 150 X 100 X 40 cm in size. It displays numerous grooves, all V-shaped, running across one of its faces, and one groove cutting across the width of the other face. Functionally, it is assumed that both artifacts served as flint-knapping abraders, being used to create new striking platforms on the edges of chipped-stone tools or preforms.

Burned earth: A total of 24 irregularly shaped, rough-surfaced pieces of burned earth were retrieved from the site. Only two of the total bear grass impressions. None of the specimens are eroded and they are interpreted as being of modern origin, resulting from the recent burning of driftwood piles.

Summary and conclusions

14CF360 is identifiable as representing the remains of an historic Euro-American farmstead and/or dump, and the remains of a prehistoric camp site. The historic component is sparsely represented and is probably the result of chance deposition of artifacts rather than an historic occupation. It is not historically significant.

The prehistoric component is abundantly represented, at least by lithic if not by ceramic artifacts, and in fact, more than one component may be represented by the material. A Middle or Late Ceramic component is clearly indicated by the small, plain, triangular projectile points. The component likely represents the remains of a Pomona focus occupation although there is no definite ceramic evidence to support this conclusion. The strong possibility of an Early Ceramic component is apparent, based on the presence of the two Hopewellian-like sherds and some of the projectile points, but the evidence is minimal and somewhat equivocal. There is certainly no clearcut evidence of a Greenwood phase occupation, and there is even less basis for assuming a Kansas City Hopewell occupation.

The site unfortunately has little or no scientific significance, judging from the negative testing results and the adverse impact caused by cultivation and wave action erosion. However, additional

survey would appear to be warranted, since it could conceivably result in the obtaining of more reliable evidence relating to the possible Early Ceramic occupation.

Site 14CF361

Site description

Reservoir location: At an elevation of 1036-1050 ft, in the flood control pool at the edge of the conservation pool.

Soil type: Summit silty clay loam.

Setting: 14CF361 is in the uplands above the left bank of the Neosho river. The site covers an area approximately 200 X 300 m in size on the end of an upland ridge which is part of a broad bench extending out from a higher, steeply sloping upland ridge located a few hundred meters to the northeast of the site. The ridge is now a point of land extending out into the reservoir. A minor drainage, now a cove of the lake, lies to the north and northwest of the site. The lake lies to the immediate south and southwest. Archeological materials were concentrated out towards the tip of the ridge.

Present conditions: The site is in a fallow field and is covered by grass, weeds, brush, and a small grove of trees except where eroded along the edge of the lake. The trees are located on the extreme tip of the landform. Wave action has cut away at the ridge, stripping away the top soil along the edge of the conservation pool and leaving a narrow, steeply sloped clay beach with occasional cutbanks. Archeological materials have been exposed and washed out of situ by the erosion.

Investigations

14CF361 was visited twice during the field season. The investigation consisted of pedestrian survey, the collecting of exposed archeological materials from the surface, and the taking of four soil probes. The probes revealed no evidence of subsurface cultural manifestations, but they did reveal the presence of a former cultivation zone, and the fact that the erosion of the surface soil was less pronounced as one moved away from the conservation pool.

Historical research revealed that a building was present on or closely adjacent to the site area in 1878. The land, and presumably the building, was owned by W. and T. Kennedy (Edwards Brothers 1878:51).

Archeological materials

The archeological materials encountered at 14CF361 consisted of historic and prehistoric artifacts, burned earth, faunal material, and numerous chunks of burned limestone and red sandstone. The historic material was neither impressive nor plentiful, and for this reason only a few of the more informative ceramic specimens were retrieved. All the prehistoric ceramic artifacts and lithic tools and all the daub and faunal material were collected, along with a representative sample of the lithic debitage.

Historic artifacts: The historic material collected from the site includes three stoneware rim sherds, a section of a stoneware strap handle, and a section of an earthenware rim sherd. The stoneware rim sherds are from three different vessels. One rim sherd has a Bristol cream glaze on both exterior and interior, another has an Albany-glazed interior and a salt-glazed exterior, and the other has a dull Albany-glazed interior and body exterior, and a salt-glazed rim exterior. The stoneware handle displays a gray glaze. The earthenware rim sherd has a brown lead slip glaze which covers the rim interior and the lip, but only the uppermost half of the rim exterior.

Prehistoric artifacts: The prehistoric artifact inventory consists of ceramic and lithic artifacts.

Ceramics: The ceramic inventory consists of pottery sherds and burned earth. The pottery includes two rim sherds, four neck and/or shoulder sherds, and 29 body sherds. All are tempered with indurated clay. Five of the body sherds are exterior spalls lacking their interior surfaces, and one sherd is an interior spall. All the sherds are weathered and oxidized.

Surface textures of the sherds are fine. Cores are laminated to contorted. The sherds range in color from light orange and tan to gray, with oranges predominating. The cores are primarily gray; some are tan. Surface treatment in all observable cases featured cord-roughened exteriors and plain and somewhat lumpy interiors. Judging from the rim and neck sherds, the cord roughening was vertically oriented, but approximately half of the body sherds exhibit criss-cross cord markings. Although analysis was difficult due to the effects of the weathering, the cord marking was observed to be of varying relief and fairly wide spacing, with medium to narrow-gauge cord having been used. The cord impressions on one rim sherd and one body sherd were discernible as having been produced by the use of Z-twist cord. On two of the neck sherds, S-twist cord impressions, of slightly deeper relief and greater distinctness, size, and regularity than the cord marking on the other two sherds, were observed. These impressions were just

under the neck of the vessel(s), apparently forming a row along the shoulder. They may represent decoration, although a functional explanation for their presence is also possible.

Morphologically, all four of the neck/shoulder sherds indicate that the vessels represented had clearly defined necks with prominent shoulders. Neither of the two rim sherds have necks, unfortunately. The smaller of the two is a straight rim, but is otherwise uninformative due to its small size. The larger of the rims, however, not only extends downward from the lip some 50 mm, but exhibits a marked curve towards the exterior. Both sherds have narrowed and rounded lips. Judging from the observed morphological differences, it is inferred that two different sorts of vessels were made: jars, evidenced primarily by the neck sherds, and bowls, represented by the larger of the two rim sherds. The two rim sherds measured 5 mm and 6 mm thick, with lips measuring 3.5 mm and 4 mm thick, respectively. The four neck/shoulder sherds, measured at their thickest points, at the rim/shoulder juncture, were 7.5-10 mm thick with an average of 8.6 mm. Body shard thicknesses ranged from 4.5-8.5 mm, with an average of 6.5 mm.

Burned earth was also found at the site. Five small pieces were collected. No tempering is evident on any of the pieces. All five pieces are tan colored and exhibit rough, irregular surfaces with occasional grass and twig impressions. The impressions are all remarkably clear and uneroded. Due to the freshness of the impressions, all five pieces are interpreted as being of modern origin, the result of the burning of driftwood at the site.

Lithic artifacts: The lithic artifact inventory consists of chipped stone. Projectile points, bifaces, endscrapers, retouched and utilized flakes, cores, and debitage were collected.

Projectile points: Two small, plain, triangular projectile points were retrieved from the site. Both are incomplete, lacking tip sections. Both points are made of heat-treated, mottled, pink and white chert, and exhibit retouching along their edges. Both have straight sides, but one has a straight base and one has a sub-concave base. The former measures 13 mm wide at the base, with a thickness of 3.5 mm and an estimated length of 34 mm; the latter is 13.5 mm wide and 2.5 mm thick, with an estimated length of 27.5 mm. Typologically, these points can be relegated to the Fresno projectile point type (c.f. Bell 1960:44).

Bifaces: Eight thin bifaces, three of which appear to be stem fragments of projectile points or point preforms, were found at the site. One of the other five bifaces is the midsection of a projectile point or knife; the remainder are fragments of unidentifiable cutting tools. One of the latter is made of heat-treated,

mottled, pink chert; the other four are made of gray chert. One of the stem fragments is made of heat-treated, pink, fossiliferous, banded chert, another is made of gray chert, and the other is a finely textured light tan chert.

Of the three stems, only one is retouched to a degree that suggests it to be a section of a finished projectile point. Morphologically, the stem is slightly expanding, with a sub-convex base measuring 19.5 mm wide and 6 mm thick. Assuming that all of the stem is present, the stem length is 16 mm. Typological classification borders on speculation since the blade of the point is missing, but affinities can nevertheless be seen with the Lange or Ellis projectile point types (c.f. Bell 1958:36, and 1960:32, respectively).

The other two bifaces tentatively identified as stems exhibit very little retouch, and one is relatively thick. Both appear to be unfinished and are likely fragments of preforms. Morphologically, both have contracting stems with convex bases. Typologically, these two artifacts are suggestive of the Gary projectile point type (c.f. Bell 1858: 28).

Endscrapers: Two endscrapers were found at the site. Only one is complete; the other consists of only the distal, "bit" end of the tool. Both are made of gray chert, one with cortex covering most of the dorsal face. Morphologically, both specimens are snubnosed and plano-convex in longitudinal cross-section, and keeled in transverse cross-section. The artifacts measure 25 and 30 mm wide at the bit, and 15 and 11 mm thick, respectively. The one complete scraper is 38 mm long.

Retouched flakes: One retouched flake scraper and five retouched flakes were found at the site. The retouched flake scraper has one steeply retouched bit end, and exhibits utilization wear along both lateral edges on the ventral face of the flake. It is made of finely textured, gray, banded chert. The five retouched flakes are made of a variety of chert sources, two of which appear to have been heat treated. All five are minimally retouched along one of each of their edges.

Utilized flakes: Three utilized flakes were found. All are made of fossiliferous gray chert, and exhibit unifacial utilization wear along one of each of their edges.

Cores: Six cores, all irregularly shaped, were found at the site. All six are remnants of small field-chert cobbles.

Debitage: A total of 154 pieces of debitage, including 152 waste flakes and two pieces of shatter, was collected from the site. The total includes two primary, 21 secondary, and 129 blank decortication flakes, and two blank pieces of shatter. All secondary and primary specimens were derived from field chert. At least 20 percent of the debitage appears to have been heat treated.

Faunal remains: Two small, unburned, and heavily weathered pieces of bone were found at the site. Both appear to be fragments of the long bones of a large animal.

Summary and conclusions

14CF361 is identifiable as representing the remains of an historic Euro-American farmstead and/or dump possibly derived from the W. and T. Kennedy farming operation of the 1870s, and the remains of a prehistoric camp site attributable, on the basis of diagnostic ceramic and lithic evidence, to the Pomona focus of the Middle Ceramic time period. No structural remains were found at the site, but evidence of hearths, in the form of burned limestone, was encountered. Burned earth and faunal remains were also found, but both are presumed to be of modern origin. Limited testing at the site produced no evidence of subsurface cultural manifestations.

The site has been severely affected by the effects of wave-action erosion and likely by cultivation. Judging as well from the negative testing results, most if not all of the site's primary archeological context has been destroyed. The site thus appears to have little or no potential for the future recovery of archeologically significant information and cannot be regarded as being historically or scientifically significant.

Site 14CF362

Site description

Reservoir location: At an elevation of 1036-1050 ft, in the flood control pool at the edge of the conservation pool.

Soil type: Woodson silt loam.

Setting: 14CF362 is in the uplands above the left bank of Hickory creek, about a mile downstream from the confluence of West Hickory and East Hickory creeks and a mile upstream of the former confluence of Hickory creek and the Neosho river. The site covers an area approximately 100 X 100 m in size on the end of an upland ridge which is part of a broad bench extending out from a higher upland

ridge located 300-500 m to the east. The ridge is now a point of land extending out into the reservoir. The conservation pool borders the site on the immediate west and southwest.

Present conditions: The site is in a fallow field and is covered with grass, weeds, brush, and small trees through which an unmaintained, once-gravelled road passes. The road ends in a turnaround located in the approximate center of the site. The area was cultivated in the past and is presently being used as an ad hoc recreation area. It is being adversely affected by vehicular traffic which has succeeded in killing the vegetation over a sizable expanse of the ground surface, thus exposing archeological materials. The site is also being adversely affected by the effects of water erosion. Wave action has stripped away the top soil along the edge of the conservation pool, creating a narrow clay beach with occasional cutbanks and exposing and washing artifacts out of situ. Fluctuation of the reservoir level has resulted in the deposition of silt, debris, and driftwood across portions of the site.

Investigations

The site was visited on three occasions during the field season. The investigation consisted of pedestrian survey and the collecting of exposed archeological materials from the surface.

Archeological materials

The archeological materials encountered at 14CF362 consisted of historic and prehistoric artifacts, faunal material, and small chunks of red sandstone. All prehistoric ceramics and lithic tools and all faunal material were collected, along with a representative sample of the prehistoric lithic debitage and the historic material.

Historic artifacts: One stoneware body sherd was taken from the site. It has an unglazed orange interior and a gray salt-glazed exterior.

Prehistoric artifacts: The prehistoric artifact inventory consists of ceramic artifacts, chipped-stone tools and debitage, and one ground-stone tool.

Ceramic artifacts: One rim sherd, two neck sherds, and 29 body sherds were found at the site. All are tempered with indurated clay, but one body sherd also has a small amount of grit or sand. It is worth noting that all of the sherds, except for one very small and uninformative indurated-clay-tempered body sherd, were found together in a 1 m² area at and just below the ground surface. It is therefore quite possible that these sherds represent one vessel.

Surface textures of the sherds are fine, except for the medium-coarse, partially grit-tempered body sherd. Core textures range from laminated to compact, with the majority of the sherds being laminated. Surface colors range from orangish tan to dark brown; core colors primarily are gray or dark brown. The surface treatment consists of primarily cord-roughened exteriors and plain and somewhat lumpy interiors, the latter exhibiting numerous irregular linear striations, apparently the result of scraping or wiping the interior with grass or some similar material.

On the sherd exteriors, several interesting facts were noted. First, two of the body sherds are plain, one of which is the partially grit-tempered sherd. Second, of the remaining pottery sherds on which cord roughening is discernible (one body sherd is too weathered for analysis and another is an interior spall), two kinds of cord-roughening are apparent: parallel and criss-cross. The parallel cord roughening is found on the rim sherd, the neck sherds, and those body sherds whose variability in thickness and curvature suggest that they are from the shoulder of the vessel or vessels. Judging in particular from the rim and neck sherds, the cord roughening on the upper portion of the vessel was vertically oriented. The criss-cross cord roughening, on the other hand, is found on the thinner, flatter body sherds which were presumably located throughout the body of the vessel(s). The cordage used in producing the criss-cross effect appeared to be slightly thinner (fine gauge) than that used for the parallel cord roughening (fine to medium gauge). In all observable cases, however, an S-twist cord was used in producing the cord roughening.

Morphological analysis was facilitated by a fortuitous fit between a rim sherd and a neck sherd, which indicated a jar vessel form featuring a high, slightly outcurved rim over a sharply defined neck and prominent, flaring shoulders. The rim height is approximately 40 mm, with a mid-height rim thickness of 7 mm. The lip is narrowed and rounded, and 3.5 mm thick. The two neck sherds, at their thickest points, which are located towards the shoulder rather than at the neck, measure 9 mm and 10 mm thick, respectively. The body sherds range from 4-10 mm thick, with an average of 5.9 mm. The thickest body sherds are those which appear to be derived from the shoulder of the vessel.

Decoration was apparently confined to the lip of the rim, where diagonal tool impressions were formed. A smooth, rounded dowel, approximately 3 mm in diameter, was used in making the 3 mm deep impressions, which were laid across the lip in a horizontal fashion at an oblique angle to the path of the rim. Spacing of the impressions is uncertain due to the small size of the sample (only one rim sherd) and the variability exhibited in that sample: only three impressions are present, with the spacing varying from 8 to 20 mm.

One last ceramic observation has to do with the method of manufacturing of the vessel. On the rim-sherd/neck-sherd fit, it is obvious that a coil, or a linear "lump" of clay, was added to the neck exterior. The coil, unlike either the rim or the shoulder on which it was placed, displays no cord roughening. Moreover, the coil has been only partially and haphazardly "welded" to the neck, a fact which apparently resulted in a weak bond between the rim and shoulder sections and consequent breakage of the vessel at the neck. It seems likely that the coil is a patch applied either to bolster an overly thin neck or to correct a crack which developed in the relatively thin neck of a more or less completed (but unfired) vessel.

Lithic artifacts: Both chipped-stone and ground-stone artifacts were found. The chipped stone consists of three projectile point fragments, two thin bifaces, one chopper, and debitage. The ground stone consists of one sandstone abrader.

Projectile points: The most complete of the three projectile points is a large, expanding-stemmed, corner-notched specimen, made of finely textured, heat-treated, pinkish white chert. The tip and most of the lateral edges are missing from the point, which has been unifacially reworked along several of its broken edges and unifacially utilized on others. A broad, shallow, slightly off-center, unifacially worked basal notch has also been produced. Most of the reworked and utilized edges are slightly concave, suggesting that the point underwent extensive use as a spokeshave. Measurement of the specimen was somewhat meaningless due to the breakage; however, the point measured 37 mm wide at the base and 7 mm thick, with an estimated shoulder width of 42 mm and an estimated length of 70-80 mm. No exact typological affinities could be ascertained due to the fragmentary nature of the point as well as the lack of certainty about whether the point was meant to be basally notched. Assuming that it was not, the artifact bears a resemblance to the Williams projectile point type (c.f. Bell 1960:96).

The second of the three points to be described also has an expanding stem, but the extant portion of the artifact is small and basically uninformative. Made of grayish white chert, the fragment consists of a corner of the original point, primarily the tang and part of the base. The notch element is visible, but almost all of the barb section is missing. The base is sub-convex in shape, and the fragment is 6.5 mm thick. No typological affinities could be determined due to the small size of the fragment.

The third of the three projectile points is apparently the basal section of a small, thin, plain, triangular point. It is made of finely textured, heat-treated, gray and red chert. The sides of the point are straight, but the base exhibits an

asymmetrical unifacially produced and heavily utilized notch or concavity similar to that seen on the first projectile point described. The point measures 4.5 mm thick, and 19 mm wide at the base, with an estimated length of 37 mm. Assuming that the basal concavity was not present on the original point, a typological affinity can be seen with the Fresno or Madison projectile point types (c.f. Bell 1960:44, and Perino 1968:52, respectively).

Bifaces: Two thin bifaces were collected from the site. One, made of gray chert, is the tip section of a projectile point or knife. It has straight sides and is 5.5 mm thick. The other biface is a fragment of a circular-shaped piece, made of gray fossiliferous chert. It is rather crudely flaked, and is 6 mm thick.

One large and crudely flaked biface, interpreted as a chopper, was also found at the site. It was made from a small, slab-shaped field-chert cobble, and exhibits large percussive flake scars on both faces, with most of the flaking concentrated along one bifacial edge. Cortex remains on portions of both faces of the artifact.

Debitage: A total of 22 pieces of debitage, all waste flakes, were collected from the site. The total includes four secondary and 18 blank decortication specimens. Two of the secondary flakes were derived from field-chert cobbles; the other two exhibit limestone cortex. Only three flakes (approximately 14 percent of the total) appear to have been heat treated.

Abraders: One ground-stone artifact, a sandstone abrader, was found at the site. It is more or less loaf shaped, and measures 47 mm long, 22 mm wide, and 11 mm thick. Made of coarsely textured, reddish brown sandstone, the artifact exhibits a single, straight, V-shaped groove which runs the length of the tool. The groove is approximately 4-5 mm wide at its aperture and is about 3 mm in depth.

Faunal remains: The faunal material found at the site consists of one unburned animal tooth. It is identifiable as being derived from an adult deer or antelope.

Summary and conclusions

14CF362 is identifiable as representing the remains of an historic Euro-American farmstead and/or dump, and the remains of a prehistoric camp site attributable, on the basis of diagnostic ceramic and lithic artifacts, to the Pomona focus of the Middle Ceramic time period. No structural remains or evidence of any other cultural features were found at the site. The historic

component is sparsely represented and is likely the result of the chance deposition of artifacts rather than an actual occupation. It is not historically significant.

The site has been adversely affected by cultivation, wave-action erosion, and vehicular traffic associated with ad hoc recreational use. Due to the latter factor, it is likely that the site has been vandalized by the removal of artifacts by private collectors. Judging from the upland location of the site and the degree of adverse impact, as well as the absence of any surficial indicators of subsurface remains, the site has little or no investigative potential and appears unlikely to yield any further archeologically significant information.

Site 14CF363

Site description

Reservoir location: At an elevation of 1040-1050 ft, in the flood control pool, just south of the Hickory Creek West Recreation Area facilities.

Soil type: Woodson silt loam and Dennis silt loam.

Setting: 14CF363 is in the uplands above the former left bank of the Neosho river and the former right bank of Hickory creek, about a mile upstream of the former confluence of the two stream courses. The site covers an area approximately 300 X 300 m in size on the end and eastern slope of a southerly pointing upland ridge which extends out from higher uplands located 400-600 m to the north. The ridge, the ultimate upland point separating the valleys of the Neosho river and Hickory creek, is now a point of land extending into the reservoir. The conservation pool borders the site on the west, south, and east.

Present conditions: The site is in a fallow field and is primarily covered by grass and weeds except where eroded. A small grove of trees is present in the northern portion of the site area, and an unmaintained dirt road meanders through the western portion. The site has been cultivated in the past and is presently receiving adverse impact from the effects of water erosion, vehicular traffic, and the burning of driftwood. Wave action has stripped away the top soil along the edge of the conservation pool, creating a clay beach with occasional cutbanks and exposing and washing artifacts out of situ. Fluctuation of the reservoir level has resulted in the deposition of silt, driftwood, and debris over the site area. The driftwood has been periodically pushed into piles and burned by project employees, resulting in some surface soil disturbance and the creation of burned earth, some which is grass and twig impressed and could be mistaken for daub. Vehicular traffic has exposed

archeological materials in the dirt road, making it likely that artifacts have been removed from the site by unauthorized collectors due to the site's proximity to the Hickory Creek West Recreation Area.

Investigations

14CF363 was visited twice during the field season. The investigation consisted of pedestrian survey, the collecting of artifacts from the surface, and the taking of four soil probes. The probes revealed no evidence of subsurface cultural manifestations.

Archeological materials

The archeological materials encountered at 14CF363 consisted of prehistoric lithic artifacts, including one projectile point, bifaces, retouched and utilized flakes, cores, and debitage. All tools and cores were collected, but due to the profuseness of the debitage only a representative sample was taken.

Projectile points: The one projectile point found at the site is made of heat-treated, mottled, pink and gray chert. It is complete except for one tang. The artifact is basically triangular in shape, with an expanding stem formed by corner notching. The blade is triangular in shape with straight sides, although one side has been resharpened down to but not including the barb, leaving what could be most accurately described as a concave side. The blade is also slightly but noticeably beveled on the left edge of both faces, and is somewhat thick through the middle, with a triangular to diamond-shaped transverse cross-section. The barbs of the blade are not pronounced. The stem has a subconcave, nearly straight base. It is 15.5 mm wide, with an estimated basal width of 23.5 mm. The point measures 41.5 mm long, 25.5 mm wide at the shoulders, and 8 mm thick. The blade is 29 mm long; the stem 12.5 mm. Typologically, an affinity with the Edgewood projectile point type (c.f. Bell 1958:20) is likely.

Bifaces: The biface inventory includes a tip section and a mid-section of two apparently finished projectile points or knives, and six small, crudely chipped, relatively unshaped biface fragments which appear to be simple test pieces rather than actual tools. All of the latter are made of fossiliferous gray chert. The tip section is made of fossiliferous gray chert and is 5 mm thick. It has straight to slightly convex sides and is triangular in shape. The midsection is made of heat-treated, mottled fossiliferous pink chert. It is 6.5 mm thick and 31 mm wide, and has slightly convex sides and a subtriangular shape.

Retouched and utilized flakes: Four retouched flakes were recovered from the site. None appear to be heat treated. Three are made of fossiliferous gray chert and the other of tan field chert. All four exhibit minimal unifacial flaking along one or two edges. Two utilized flakes were found. Both are made of fossiliferous gray chert. One flake exhibits bifacial wear indicative of use as a cutting tool, and the other displays a unifacially utilized concavity suggestive of use as a spokeshave.

Cores: Four cores were taken from the site. Two are quite small and could as well be termed core remnants or core fragments. One of the latter two is made of fossiliferous gray chert, and the other is the remnant of a heat-treated field-chert cobble. The two larger cores are made of fossiliferous brown chert and fossiliferous gray chert, respectively. Limestone cortex is exhibited on portions of the surfaces of both. All four cores are irregular in shape, but only the brown chert specimen appears to have been heat treated.

Debitage: A total of 73 pieces of debitage, including 68 waste flakes and five pieces of shatter, was retrieved from the site. The total includes one primary, 15 secondary, and 52 blank decortication flakes, and five blank pieces of shatter. The majority of the primary and secondary specimens were derived from field-chert cobbles. Fully 72 percent of the debitage consists of fossiliferous gray chert; of the remaining 21 pieces of debitage, 50 percent appear to have been heat treated.

Summary and conclusions

14CF363 is identifiable as representing the remains of a prehistoric camp site. The remains are attributable, on the basis of the presence of a corner-notched projectile point, to one of the Early Ceramic or Middle Ceramic cultural complexes. Corner-notched points of this sort are most commonly thought of as Early Ceramic in age, but they are also found in Middle Ceramic Pomona focus context. Therefore, in lieu of more diagnostic lithic or ceramic evidence, the exact cultural affiliation of the prehistoric occupants must remain somewhat vaguely defined. No structural remains or evidence of any other cultural features were encountered at the site, and limited testing produced no evidence of subsurface cultural manifestations.

The site has been adversely affected by various forms of impact, primarily wave-action erosion. Judging from the impact and the negative testing results, the site has little or no potential for the recovery of archeologically significant information and thus cannot be regarded as being scientifically significant.

Site 14CF364

Site description

Reservoir location: At an elevation of 1036-1050 ft, in the flood control pool at the edge of the conservation pool.

Soil type: Kenoma silt loam.

Setting: 14CF364 is in the uplands above the former left bank of Hickory creek, about 600 m upstream and to the northeast of the former confluence of Hickory creek and the Neosho river. The site covers a large area approximately 250 X 600 m in size on the end of a shallowly sloping, southerly pointing upland ridge which extends out from higher uplands located 1000-1040 m to the north. The area is presently a point of land extending out into the reservoir. It is bordered on the east by a minor drainage, now a cove of the reservoir, and on the west and south by the reservoir itself.

Present conditions: The site is in a fallow field covered by grass, weeds, brush, small trees, and recently deposited silt except where eroded along the shoreline. The site has been cultivated in the past and is presently receiving adverse impact from the effects of wave action. Wave action has stripped away the top soil along the edge of the conservation pool, leaving a wide clay beach and exposing and washing artifacts and structural remains out of situ. Fluctuation of the reservoir level has resulted in the deposition of silt, debris, and driftwood across the inland portions of the site. At the time of the survey, this activity had created a small natural levee of recent silt along the edge of the beach.

Investigations

The site was visited once during the season. The investigation consisted of pedestrian survey and the collecting of exposed archeological materials from the surface.

Historical research revealed that a building was present on or closely adjacent to the site in 1878 (Edwards Brothers 1878:45). The land, and presumably the building, was owned by the J. Wilkinson estate.

Archeological materials

The archeological materials encountered at 14CF364 consisted of historic and prehistoric artifacts and historic structural remains. The structural remains consisted of deteriorating cement building foundations and assorted bricks and masonry fragments.

All prehistoric artifacts and a representative sample of the historic artifacts were collected.

Historic artifacts: Two stoneware rim sherds were collected. They both display Albany-glazed interiors and salt-glazed exteriors, but variations in the glazes and the morphology of the sherds indicate them to be from two different vessels.

Prehistoric artifacts: One biface fragment, one retouched flake scraper, and debitage were found. The biface fragment is a small, crudely chipped, beveled-edged specimen, made of gray chert. It is 8 mm thick. The retouched flake scraper is a lightly worked, fan-shaped specimen, made of fossiliferous gray chert. It measures 21.5 mm long, 32 mm wide, at the bit, and 7 mm thick.

A total of 14 pieces of debitage, including eight waste flakes and one piece of shatter, was found. The total includes two secondary, thin blank decortication flakes, and one secondary piece of shatter. The three secondary specimens were all derived from field worn cobbles. Only two of the flakes appear to have been heat treated.

Summary and conclusions

14CF364 is identifiable as representing the remains of an historic Euro-American farmstead, possibly derived from the J. Wilkinson farming operation of the 1870s, and the remains of a prehistoric camp site of indeterminate age and cultural affiliation. Historic structural remains of uncertain age were found in the western portion of the site, along the edge of the conservation pool, but no other cultural features of historic or prehistoric origin were encountered. The site is not historically significant.

The site has been adversely affected by cultivation and wave-action erosion, factors which have very likely destroyed most if not all of the site's primary archeological context. Judging from the severity of the impact, the site has little or no investigative potential and is unlikely to yield any further archeologically significant information. It thus appears to have no scientific significance.

Site 14CF365

Site description

Reservoir location: At an elevation of 1040-1050 ft, in the flood control pool, in the Hickory Creek East Recreation Area.

Soil type: Woodson silt loam.

Setting: 14CF365 is in the uplands above the former left bank of Hickory creek, about a mile downstream of the confluence of West Hickory creek and East Hickory creek and a mile and a half upstream of the former confluence of Hickory creek and the Neosho river. The site covers an area approximately 200 X 300 m in size on the end of a westerly pointing upland ridge which extends out as part of a broad bench from higher uplands located 350-450 m to the east. The site is now a point of land extending out into the reservoir. It is bordered on the north, west, and south by the conservation pool.

Present conditions: The site is in a formerly cultivated field now covered by grass, weeds, brush, and a few small trees except along the northern and western shorelines, where wave-action erosion has taken place, and the southern shoreline, which has been partially covered with riprap. A ditched and graveled road leads into and circles around the middle of the site area, creating a grassed-over "island". An abandoned boat ramp, consisting of several large concrete slabs, is located on the northern shoreline.

The site has been cultivated in the past and is presently receiving severe adverse impact from the effects of wave action. Wave action has stripped away the top soil along the edge of the conservation pool, leaving a clay beach and exposing and washing artifacts out of situ. Ripraping of the southern shoreline has slowed the erosion in that area, but has also resulted in a severe impediment to archeological surface investigation, as has the graveling of the road. It should be added that the site, being the location of an authorized recreation area, has undoubtedly been adversely affected by the depredations of both casual and experienced artifact collectors.

Investigations

The site was visited on three occasions during the season, once by the Kansas Archeological Training Program survey crew. The investigation consisted of pedestrian survey, the collecting of exposed archeological materials from the surface, and the excavation of seven 60 cm² test pits. The pits were each 50 cm deep. They were located in two east-west lines running across the middle and northern half of the "island" in the center of the site. No artifacts or any other cultural evidence were encountered in the excavations.

Archeological materials were mainly found in the eroded shoreline area, but the localized nature of the finds was clearly the result of vegetational conditions. "Lots of flint chips..." were reportedly unearthed further inland, on and around the crest of the ridge, when roadwork and ditching took place (J.D. Lichlyter, personal communication 1979).

Historical research revealed that building was present on or closely adjacent to the site in 1878 (Edwards Brothers 1878:51). The land, and presumably the building, was owned by a J. Eubank.

Archeological materials

The archeological materials encountered at 14CF365 consisted of historic and prehistoric artifacts. All historic artifacts and all prehistoric ceramic artifacts and lithic tools were collected, in addition to a representative sample of the prehistoric lithic debitage.

Historic artifacts: Three stoneware body sherds, one whiteware body sherd, and two glass fragments were found at the site. Two of the stoneware sherds are Albany glazed; the other exhibits a reddish brown glaze. The whiteware sherd is an undecorated, interior spall of a vessel or plate. The glass fragments include one clear, turquoise specimen and one clear, brown specimen. The latter may in fact be a fragment of a modern beer bottle.

Prehistoric artifacts: The prehistoric artifact inventory includes ceramic artifacts, lithic tools and debitage, and one piece of ground hematite.

Ceramic artifacts: Three small body sherds were found at the site. All three are highly eroded, and one is so small as to be virtually uninformative. Tempering consists of indurated clay and small amounts of crushed bone in two specimens, and indurated clay only in the other. The surface textures are fine; cores are laminated. Surface colors range from orangish tan to gray; cores are the same. The surface treatment was difficult to determine due to the advanced erosion, but one sherd clearly had a cord-roughened exterior with a plain interior. Medium-gauge cord of uncertain twist was used in making the impressions, which are spaced about 4 mm apart. Vessel morphology could not be determined from the evidence at hand, but the three sherds measure 7, 6, and 4 mm thick, respectively.

Chipped stone: The chipped-stone tool inventory includes one endscraper fragment and three retouched flakes. The former, made of gray, fossiliferous banded chert, consists of the proximal end of a plano-convex endscraper. It is keeled, and exhibits some retouch along its edges. At its widest point the fragment is 23.5 mm wide and 8 mm thick.

The three retouched flakes include two of fossiliferous gray chert and one of mottled, gray and white chert. One of the former has been heat treated. All three flakes exhibit slight retouching along portions of one or two of their edges. No intentional shaping is apparent, although one of the flakes has unifacially modified concavities suggestive of use as a spokeshave.

A total of 144 pieces of debitage, including 135 waste flakes and nine pieces of shatter, were found at the site. The total includes seven primary, 22 secondary, and 106 blank flakes, and one primary, four secondary, and four blank pieces of shatter. The majority of the secondary and primary specimens were derived from field-chert cobbles. Approximately 52 percent of the debitage appears to have been heat treated.

Ground stone: One small, ground hematite fragment was collected from the site. It is a small, slab-shaped fragment, with grinding striations covering one face and one side. It has not been polished and does not appear to have been intentionally shaped into any sort of a tool or ornament. Functionally, it may have served as a source of pigment.

Summary and conclusions

14CF356 is identifiable as representing the remains of an historic Euro-American farmstead and/or dump, possibly derived from the J. Eubank farming operation of the 1870s, and the remains of a prehistoric camp site attributable, on the basis of relatively diagnostic but rather sparse ceramic evidence, to the Pomona focus of the Middle Ceramic period. No structural remains or evidence of any other cultural features were encountered at the site, and limited testing failed to produce any evidence of subsurface cultural manifestations.

The site has been adversely affected by cultivation, wave action, road construction, and possibly vandalism. Judging from the erosion and the negative testing results, most if not all of the site's primary archeological context has been destroyed. The site thus appears to have little or no potential for the recovery of any further archeologically significant information and cannot be regarded as being scientifically or historically significant.

Site 14CF366

Site description

Reservoir location: At an elevation of 1050-1060 ft, in the flood control pool.

Soil type: Kenoma silt loam.

Setting: 14CF366 is in the uplands above the left bank of Hickory creek, about 500 m downstream of the confluence of West Hickory creek and East Hickory creek. The site covers an area approximately 150 X 300 m in size on the end of a westerly pointing upland ridge which extends out from a higher ridge located 300-400 m to the

east. The site is bordered on the north by steep slopes leading down to Hickory creek and on the south by a minor drainage, now a shallow cove of the reservoir. Towards the west, the ridge drops gently down to a fairly substantial bottomland area and the creek.

Present conditions: The site is under cultivation. A small grove of trees is present in the south central portion of the site, and an unmaintained dirt road runs along the southern and western edges before swinging down to the bottomland area to the west. The site is receiving adverse impact from the effects of cultivation, wave action, and vehicular traffic. The wave-action erosion is mainly confined to the southern and western slopes of the site, where the wave action has stripped away the top soil and exposed the clayey upland subsoil, exposing and washing artifacts out of situ in the process. The alluvial activity has also resulted in the deposition of driftwood and debris in the southwestern portion of the site. Recreational use of the area constitutes another source of adverse impact, due to vehicular traffic along the dirt road down to the creek, apparently a popular fishing area.

Investigations

The site was visited twice during the summer. The surface of the site was somewhat obscured on those occasions due to the presence of immature winter wheat throughout most of the site, driftwood and scattered stands of alfalfa in the western portion, and a thick forest cover along the northern edge. Archeological materials were mainly found in the exposed roadway and on the eroded western and southwestern slope of the site.

The investigation consisted of pedestrian survey, the collecting of artifacts from the surface, and the excavation of four 60 cm² test pits, which were taken to depths of 30 cm below surface. The pits were situated in a semicircle along the northern and eastern edges of the small grove of trees in the south central portion of the site. No artifacts or any other cultural evidence were found below the plow zone. The testing revealed the presence of a relatively shallow plow zone, ca. 10 cm deep, with the dark, friable top soil of the plow zone contrasting sharply against the mottled, orange and reddish colored subsoil.

Archeological materials

The archeological materials encountered at 14CF366 consisted of historic and prehistoric artifacts, and scattered chunks of burned limestone and red sandstone. The historic material was both sparse and uninformative, hence only a representative sample was taken. The prehistoric materials consisted of lithic artifacts. All tools and a representative sample of thedebitage were collected.

Historic artifacts: One square-bodied, square-headed, rusty metal nail was collected.

Prehistoric artifacts: The prehistoric artifact inventory consists of chipped stone and includes projectile points, bifaces, scrapers, retouched and utilized flakes, and debitage.

Projectile points: Four projectile points were found, of which two are complete. One of the latter, made of finely textured, brown and gray banded chert, is small to medium in size and subtriangular in shape, with an expanding stem formed by corner notching. The blade has slightly convex sides and a dulled, nearly rounded tip. Barbs on the blade are well defined but not downward pointing. The stem is shallowly expanding, with a straight base. The point is 28.5 mm long, 23 mm wide, at the shoulders, and 6 mm thick. The blade is 20 mm long, the stem 8.5 mm long. Stem width is 14.5 mm; basal width is 18 mm. Typologically, the point is identifiable as representing the Ellis projectile point type (c.f. Bell 1960:32).

The other complete point is a large, wide, expanding-stemmed, side-notched specimen made of fossiliferous gray chert. It is somewhat crudely flaked, with no retouch. The tip is slightly rounded, not sharp. The subtriangular-shaped blade has slightly convex sides and prominent but slightly rounded barbs. The blade is 34 mm long, with a shoulder width of 34.5 mm. The stem is rapidly expanding, with a stem width of 27 mm and a basal width of 35 mm. The base is subconvex. Overall, the point is 49 mm long and 9.5 mm thick. Typological affinities can be seen with the Williams projectile point type (c.f. Bell 1960:96).

Of the two incomplete projectile points, one is the stem of a stemmed point, made of heat-treated, fossiliferous, pink and gray chert. Morphologically, the stem is contracting in shape, with straight sides and a subconcave base. The stem is 17.5 mm wide at its widest point and 10.5 mm wide at the base. The fragment is 5.5 mm thick. Typologically, an affinity with the Langtry projectile point type (c.f. Bell 1958:38) is evident.

The other incomplete projectile point consists of the base and midsection of a large corner-notched specimen. It is made of fossiliferous gray chert and is 13 mm thick. The artifact exhibits very little retouch and appears to be somewhat unfinished; it may possibly be a preform. Morphologically, it has a broad, 34.5 mm wide blade with well-defined barbs, and a moderately expanding stem formed by corner notching. The base is subconvex. The tangs are variable in shape, one tang being smoothly rounded and the other being angular and pointed. The basal width could not be satisfactorily measured for this reason, but the stem

width is 21 mm. The stem measures 15 mm in length. Due to the fragmentary nature and variable shape of the artifact, no clear-cut typological affinities were apparent.

Bifaces: One thin biface was found. Made of heat-treated, fossiliferous, pink and gray chert, it appears to be the tip section of a relatively wide-bladed projectile point or knife. The biface is 24 mm wide at its widest point, and 10 mm thick.

Endscrapers: Two plano-convex endscrapers were recovered from the site. One is more or less circular in shape; the other is oblong. The circular scraper is made of heat-treated, gray and white banded chert, with limestone cortex remaining along one lateral edge on both dorsal and ventral faces of the original flake. The tool exhibits steep unifacial flaking along the bit end and one lateral edge (opposite the edge with cortex), but the proximal end is unworked. The scraper is prominently keeled, with the sharp edge of the keel being slightly crushed, likely the result of socketing the scraper with a bone or wood handle. The scraper measures 29 mm long, 30.5 mm wide, and 13 mm thick.

The other endscraper is made of tan field chert. The tool exhibits steep unifacial flaking at the bit and along its lateral edges, but the butt is unworked. The scraper is keeled in the sense of having a prominent, longitudinally oriented, medial ridge, but this appears to be a fortuitous occurrence since the dorsal face is covered with unmodified cortex except along the edges of the artifact. The scraper measures 53 mm long, 37 mm wide through the midsection, and 16 mm thick at the bit.

Four retouched flakes were found at the site. Three ~~were~~ made of fossiliferous gray chert, the other is tan colored. All four are blank decortication flakes which have been unifacially retouched along small portions of their edges. No clearcut shaping of these flakes is evident.

Three utilized flakes were found, one of light gray chert and two of finely textured white chert. One of the latter exhibits a unifacially utilized concavity suggestive of use as a spokeshave; the other two display unifacial wear along one of their straight edges.

A total of 92 pieces ofdebitage, including 85 waste flakes and seven pieces of shatter, was retrieved from the site. The total includes eight secondary and 77 blank decortication flakes, and four secondary and three blank pieces of shatter. Half the secondary specimens were derived from field-chert cobbles; the other half exhibit limestone cortex. Approximately 34 percent of thedebitage appears to have been heat treated.

Summary and conclusions

14CF366 is identifiable as representing the remains of an historic Euro-American farmstead and/or dump, and the remains of a prehistoric camp site attributable to one of the Early Ceramic or Middle Ceramic cultural complexes. No structural remains were encountered, but evidence of hearths was encountered in the form of burned limestone. Limited testing, however, failed to produce any evidence of subsurface cultural manifestations.

The historic component at the site is sparsely represented and likely derives from the chance deposition of artifacts rather than an actual occupation. It is not historically significant. The prehistoric component is well represented, but its cultural affiliation is uncertain. On the basis of the only diagnostic artifacts, specifically the corner-notched, side-notched, and stemmed projectile points, the component can be interpreted as representing the Plains Woodland Greenwood phase of the Early Ceramic period. In lieu of corroborative ceramic evidence, however, this identification must be regarded as uncertain, since these point types are also found in Middle Ceramic Pomona focus assemblages.

The site is receiving adverse impact from the effects of cultivation and water erosion. Judging from the thinness of the plow zone and the abrupt soil transition from the top soil to the subsoil, cultivation and associated soil erosion has resulted in a significant loss of top soil and the consequent plowing of the uppermost portion of the subsoil. Most if not all of the site's primary archeological context has likely been destroyed. Erosion due to wave action has further contributed to the destruction of the site, primarily along the western and southern slopes of the ridge. Judging from the adverse impact and the negative testing results, the site has little or no investigative potential and is not likely to yield any further archeologically significant information.

Site 14CF367

Site description

Reservoir location: At an elevation of 1050-1060 ft, in the flood control pool.

Soil type: Dennis silt loam.

Setting: 14CF367 is in the uplands above the confluence of West Hickory creek and East Hickory creek. The site covers an area approximately 250 X 150 m in size on the end of a high, southerly pointing upland ridge which extends out from higher uplands located

1500-1700 m to the north. The ridge forms the ultimate upland point separating the two creek valleys, which lie to the west and east, respectively. A substantial bottomland area is located just south of the site, at the confluence of the two stream courses.

Present conditions: The site is under cultivation, and is bordered by weeds, brush and driftwood except where eroded. The site is receiving adverse impact from the effects of cultivation and wave action, and has in addition been damaged by agricultural terracing. Two prominent terrace ridges are present, curving across the center and southern portion of the site. Wave action has eroded away most of the top soil along the upper slopes of the ridge, and has deposited driftwood.

Investigations

The site was visited twice during the season. On both those occasions, the surface of the field was partially obscured by a cover of immature winter wheat and scattered stands of alfalfa. The investigation consisted of pedestrian survey, the collecting of artifacts from the surface, and the excavation of sixteen 60 cm² test pits, dug to depths of 45-60 cm below surface. The pits were situated within the cultivated field, on the crest and uppermost slopes of the ridge. The excavations revealed no evidence of subsurface cultural manifestations.

Archeological materials

The archeological materials encountered at 14CF367 consisted of prehistoric ceramic and lithic artifacts, daub, burned and unburned limestone and sandstone, and one piece of unworked limonite. All the ceramic artifacts, lithic tools, and limonite were collected, along with a representative sample of the lithic debitage and the larger pieces of daub.

Ceramic artifacts: Pottery sherds and daub comprise the ceramic artifact inventory. Two neck sherds and 11 body sherds were recovered. All are very eroded and oxidized. All thirteen are tempered with indurated clay. Surface textures of the sherds are fine; cores are generally laminated and some are compact. Surface colors range from orangish tan to gray, with tan predominating, and the core colors are much the same. The surface treatment consists of cord-roughened exteriors and plain, somewhat lumpy interiors. Judging from the two neck sherds, the cord roughening was vertically oriented, with the cord impressions being variably spaced. Cord twist was evident on only one sherd: Z-twist cord approximately 2 mm in diameter was used in producing the cord impressions.

Morphologically, the sherds are relatively uninformative. One of the neck sherds has a relatively well defined neck, and the other has an ill-defined neck. The two are 7.5 mm and 9.5 mm thick, respectively. The body sherds range in thickness from 4-8 mm, with an average of 5.9 mm.

Decoration is confined to one thin, shallowly incised line which runs horizontally along the shoulder portion of one of the neck sherds, cutting through the cord roughening. It is possible in fact, that the line is only of an incidental nature. Incising of this sort is not a definite diagnostic nature, but it has been regarded, when found on sherds in similar context and having Pomona ware characteristics, as representing Middle Mississippian influences during the late Middle Ceramic and/or Late Ceramic periods (Nickel 1973:38-59). The sherd is quite small, however, and can hardly be regarded as definite proof of Mississippian influence.

Along with the pottery, ten small pieces of grass-impressed, fired-clay daub were collected at the site. No tempering inclusions were observed in any of the specimens. Surface colors of the pieces range from tan and orange to gray, with orange predominating. The pieces are all somewhat eroded and three are so small as to be virtually uninformative, but grass and/or twig impressions are observable on half the inventory.

Lithic artifacts: The lithic artifact inventory from 14CF367 consists of chipped stone and includes projectile points, bifaces, one endscraper, retouched and utilized flakes, one core, and several pieces ofdebitage.

Two small, notched projectile points were found. Both are incomplete; one lacks its tip section and the other lacks its stem or base. The former is made of gray, banded chert. It has an ovoid, willow-leaf shape, with an expanding stem formed by side notching. The blade has convex sides. Barbs are definite but not prominent. The base of the rapidly expanding stem is markedly convex. The point measures 17.5 mm wide at the shoulder, or barbs, with a stem width of 6 mm and a basal width (at the widest part of the stem) of 8.5 mm. The specimen is 5 mm thick. Typologically, the point corresponds somewhat to the characteristics of the Keota projectile point type (c.f. Perino 1968:42), although its base is comparatively narrow.

The other point is also small, and notched, but the notch type and the shape of the stem cannot be determined since the stem is missing. The blade of the point is triangular in shape and somewhat elongated, with straight sides and well-defined barbs. The blade has markedly sinuous but not serrated edges, and measures 21 mm long, 11.5 mm wide, and 3 mm thick.

The stem width is 5 mm. Since the base of the point is missing, it borders on speculation to assign this specimen to any particular projectile point type, although the Scallorn projectile point type (c.f. Bell 1960:84) would seem to be the most likely candidate.

Four thin bifaces were recovered from the site, two of which appear to be fragments of projectile points or knives. Of those two, one is a tip and partial midsection, made from a very thin (2 mm thick), fossiliferous gray chert flake. It exhibits careful bifacial retouch along its unbroken edges. The other of the two appears to be the stem of a wide, short-stemmed, notched point. The fragment, made of heat-treated, mottled, orangish white chert, is 6 mm thick and 28.5 mm wide, with an apparent stem length of approximately 10 mm.

The other two thin bifaces are less finished. One, made of heat-treated, mottled, orange and gray chert, is an asymmetrically shaped tip section, with a rounded tip and one concave lateral edge. The bifacial flaking is somewhat crude, with very little retouch. The fragment is 4 mm thick and, at its widest point, 19 mm wide. The other thin biface is made of fossiliferous gray chert and exhibits very little bifacial flaking and no retouch. It has a contracting-stemmed shape, but is too narrow (13.5 mm wide at its widest point) and too thick (6 mm), as well as too crudely flaked, to be confidently regarded as a stem fragment.

One plano-convex endscraper was found at the site. Made of gray, banded chert, the scraper is ovoid to circular in shape, with steep, somewhat crude unifacial flaking along its edges. It has a prominent snubnosed shape in longitudinal cross-section. It is not keeled. No cortex is present on either face of the tool, which is 39 mm long, 30 mm wide through the midsection, and 13 mm thick.

One retouched flake scraper was found. Made of fossiliferous gray chert, the circular-shaped flake has a thick unfinished butt, or proximal end. The tool exhibits unifacial retouch on its distal, bit end, and along the distal portions of its lateral edges.

Four retouched flakes were found. All are rather minimally shaped. One, made of heat-treated, mottled, pink and gray chert, is somewhat elongated in shape and exhibits unifacial retouch along all its edges. Another has been unifacially retouched along all its edges. Another has been unifacially retouched along one edge, and displays a shallow, wide concavity suggestive of use or intended use as a spokeshave. The other two retouched flakes appear to be simple test pieces.

Four utilized flakes were collected. All four exhibit unifacial utilization wear along one or more of their edges. Two are made of fossiliferous gray chert, one is made of white, coarsely textured chert, and the other is made of heat-treated pink chert.

One large, slab-shaped core was collected. It is made of fossiliferous gray chert and has white limestone cortex covering a portion of one face.

A total of 83 pieces ofdebitage, including 78 waste flakes and five pieces of shatter, were collected. The total includes one primary, 18 secondary, and 59 blank flakes, and one primary, two secondary, and two blank pieces of shatter. Approximately 45 percent of thedebitage appears to have been heat treated.

One thumb-sized piece of limonite was found at the site. No grinding striations are observable, hence the specimen is only gratuitously defined as an artifact. Nevertheless, it is possible that the stone, the only such specimen found on or near the site, was brought to the site to be used as a source of pigment.

Summary and conclusions

14CF367 is identifiable as representing the remains of a prehistoric habitation site. The site is attributable, primarily on the basis of ceramic evidence, some of which is suggestive of Middle or Late Ceramic Mississippian influences, to the Pomona focus of the Middle Ceramic period. Surficial evidence of structural remains, in the form of daub, and hearths, in the form of burned rock, was encountered at the site. Limited testing, however, failed to produce any evidence of subsurface cultural manifestations.

The site has been adversely affected by cultivation, wave action erosion, and agricultural terracing, factors which have brought the upland subsoil to the surface. The impact has very likely destroyed most if not all of the site's primary archeological context. Judging from the severity of the impact and from the negative testing results, the site has very little investigative potential and is not likely to yield any further archeologically significant information.

Site 14CF368

Site description

Reservoir location: At an elevation of 1050-1060 ft, in the flood control pool, in the Flint Hills National Wildlife Refuge.

Soil type: Dennis silt loam.

Setting: 14CF368 is in the uplands above the left bank of Lebo creek. The site covers an area approximately 75 X 75 m in size on the end of a prominent, westerly pointing upland ridge which is part of a wide, relatively low-lying bench extending out from higher uplands located a little over a mile to the northeast. Bottomland lies to the north, west, and south of the site. A minor drainage forms the immediate northern boundary.

Present conditions: The site is in a cultivated field. It is receiving adverse impact from the effects of cultivation and has been adversely affected by extensive agricultural terracing. The upland subsoil was in evidence across most of the ridge, suggesting that the site has essentially been destroyed by terracing and subsequent cultivation.

Investigations

The site was visited twice during the season. Optimal conditions for the collecting of artifacts were encountered since the field had been recently cultivated and had then received heavy rain on both occasions. The investigation consisted of pedestrian survey and the collecting of exposed archeological materials from the surface.

Archeological materials

The archeological materials encountered at 14CF368 consisted of historic and prehistoric artifacts, pieces of burned earth, shell fragments, and scattered chunks of burned and unburned limestone. All burned earth, shell, and prehistoric tools were collected, along with a representative sample of the lithic debitage and the historic material.

Historic artifacts: Two body sherds were collected, one of stoneware and one of whiteware. The stoneware sherd has an Albany-glazed interior and a salt-glazed exterior. The whiteware sherd exhibits a violet transfer-print decoration of uncertain design.

Prehistoric artifacts: The prehistoric artifact inventory consists of chipped stone and includes a drill, bifaces, retouched flakes, cores, and debitage. The drill, which is complete except for its tip section, is made of fossiliferous gray chert. Morphologically, it is of the expanding-base, or winged, variety, with a straight base and concave, smoothly tapering sides. The bit exhibits a diamond-shaped cross-section. The tool has a basal, or stem, width of 24 mm, and a bit width of 8 mm. The maximum thickness, near the base, is 7 mm. The minimum thickness, at the broken end, is 5 mm.

Six bifaces were found. Of the six, only two have been shaped into more or less finished tool forms. These include one tip section from a projectile point or knife, and one apparently reworked projectile point or knife. The tip section is made of fossiliferous gray chert. It exhibits some retouch along its edges, and has been brought to a sharp point or tip. The fragment is 24 mm wide at its widest point, and 7 mm thick.

The other of the two shaped bifaces appears to be a reworked stemmed projectile point. Functionally, the specimen may have been used as a knife. It is made of tan chert. The tip is missing from the tool, as is, apparently, one whole lateral edge of the blade down to and including the barb. It appears that the broken edge of the blade was bifacially reworked from the stem up to the tip, creating a fairly straight, slightly convex edge. The resulting form is similar to that of a tanged knife. It is uncertain whether the reworking took place on a finished projectile point or a preform. The specimen is crudely flaked and only slightly thinned, but it exhibits some retouch along the one apparently unbroken blade edge. Judging from the barbed side of the tool, the original preform or point has a broad, subtriangular blade with slightly convex edges, a slightly expanding stem formed by corner notching, and a convex base. The artifact is 10 mm thick, with a stem width of 20.5 mm and a basal width of 21 mm. The estimated dimensions of the blade include a shoulder width of 42 mm and a blade length of 45 mm, with a total length of 64 mm for the unbroken point as a whole. The possibility should not be overlooked, however, that the present tool form was indeed the desired form.

The other four bifaces are relatively unworked and uninformative. Two were made of heat-treated field chert, and the other two from fossiliferous gray chert and tan chert, respectively. Cortex remains on small portions of the former two. All four bifaces have been crudely flaked, along portions but not all of their edges, with very little shaping being apparent.

Two retouched flakes were found, both made of heat-treated, finely textured white chert. No cortex remains on the two. Retouching on both is localized and discontinuous, with no recognizable shaping having taken place; both appear to be simple test pieces.

Six cores were recovered from the site, all but one produced from small field-chert cobbles, four of which have been heat treated. None of the cores are blank and cortex covers large portions of the field-chert specimens. All the cores are irregularly shaped.

A total of 45 pieces of debitage, including 37 waste flakes and eight pieces of shatter, were found. The total includes five primary, 13 secondary, and 19 blank decortication flakes, and six secondary and two blank pieces of shatter. In all but three cases, the primary and secondary specimens were derived from field-chert cobbles. Approximately 29 percent of the debitage appears to have been heat treated.

Burned earth: Two thumbnail-sized lumps of burned earth were found at the site. Both are dark brown to black in color, with rough, irregular surfaces. No grass or twig impressions are observable, and neither piece appears to have been tempered.

Faunal remains: Two small shell fragments were recovered. Both are heavily eroded and unburned, and may be modern in age.

Summary and conclusions

14CF368 is identifiable as representing the remains of an historic Euro-American farmstead and/or dump and the remains of a prehistoric camp site of indeterminate age and cultural affiliation. The historic component is sparsely represented, and is probably the result of chance deposition of artifacts rather than an actual occupation. It is not historically significant. The prehistoric component is better represented but the remains are relatively nondiagnostic, although the presence of the seemingly reworked expanding-stemmed point would obviously indicate an occupation other than Paleo-Indian or Late Ceramic. An Early or Middle Ceramic affiliation is most likely. No structural remains were found, but evidence of hearths was encountered in the form of burned limestone and burned earth fragments. Judging from the absence of ceramics, the paucity of finished tools, and the abundance of cores and debitage, the prehistoric component may represent the remains of a short-term flintknapping station.

The site has been severely damaged by cultivation and agricultural terracing. Judging from the amount of subsoil brought to the surface of the site, all primary archeological context has likely been destroyed. Due to the severity of the impact, it is inferred that the site has little or no investigative potential and is unlikely to yield any further archeologically significant information. It cannot be considered scientifically significant.

Site 14CF369

Site description

Reservoir location: At an elevation of 1050 ft, in the flood control pool, in the Flint Hills National Wildlife Refuge.

Soil type: Verdigris silt loam.

Setting: 14CF369 is in the bottomland on the right bank of Lebo creek. The site covers an area approximately 300 X 300 m in size along the outer and inner edges of a prominent, U-shaped, northwesterly pointing meander scar, an intermittent oxbow lake. The nearest uplands, an upland ridge separating the Lebo creek valley from the Troublesome creek and Neosho river valleys, are located 300-400 m to the north.

The site is made up of four distinct concentrations of archeological material (see Figure 5). The areas are separated from each other by both topographical distinctions and by a hiatus of material. Area 791, or A791, is located to the north of the meander scar. The remains encountered in that area included both artifactual material and grass-impressed fired-clay daub. A792 is located to the east-northeast of the meander scar. This area also contained both artifacts and daub, and subsequent excavation revealed the subsurface presence of undisturbed structural remains. A793 is located on the interior of the meander scar and A794 is located to the southeast of the scar. No daub concentrations were encountered in either of those areas, both of which yielded far less in the way of artifactual material than that encountered in A791 and A792.

Present conditions: The site is in a cultivated field and has been adversely affected by cultivation and occasional flooding. The site was completely flooded on at least three occasions during the summer.

Investigations

The site was visited on numerous occasions during the field season. Thirteen days of rather extensive work was accomplished by amateurs directed by Society archeologists as part of the Kansas Archeological Training Program, and a total of 16½ days of work was carried out by the present writer and his crew. In addition, two days of labor were given to the project by four Youth Conservation Corps enrollees working out of the Flint Hills National Wildlife Refuge office. Finally, the excavated areas of the site were backfilled by Refuge employees. The investigation was plagued by several heavy rains and the consequent partial and occasionally complete flooding of the site. On one occasion, it was necessary to use a sump pump to remove water from the excavation units at A792 before work could continue.

The archeological investigation of the site consisted of pedestrian survey, the collecting of artifacts from the surface, the taking of numerous soil probes in all four areas of the site, and the excavation at A791 and A792 of both small test pits

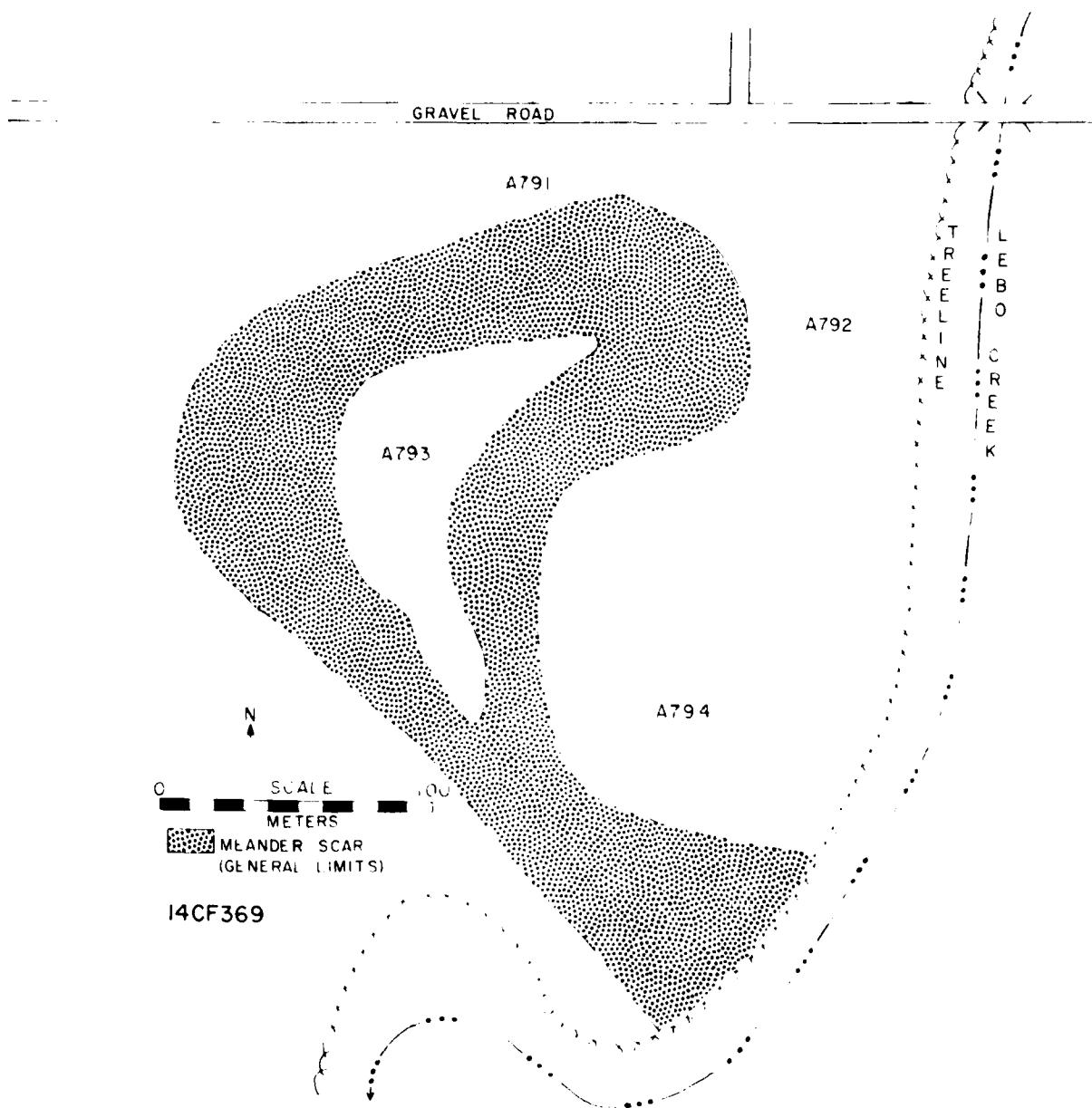


FIGURE 5. General site map of 14CF369.

and large excavation units. Since the soil probes revealed no compelling evidence of subsurface cultural manifestations at A793 and A794, no excavations were attempted in those areas.

At A791, nine rectangular 120 X 60 cm test pits, two 60 cm² test pits, and four 2 m² excavation units were excavated (see Figure 6). The excavations were taken to depths of 40-45 cm below surface, with one test pit being excavated to a depth of 55 cm below surface.

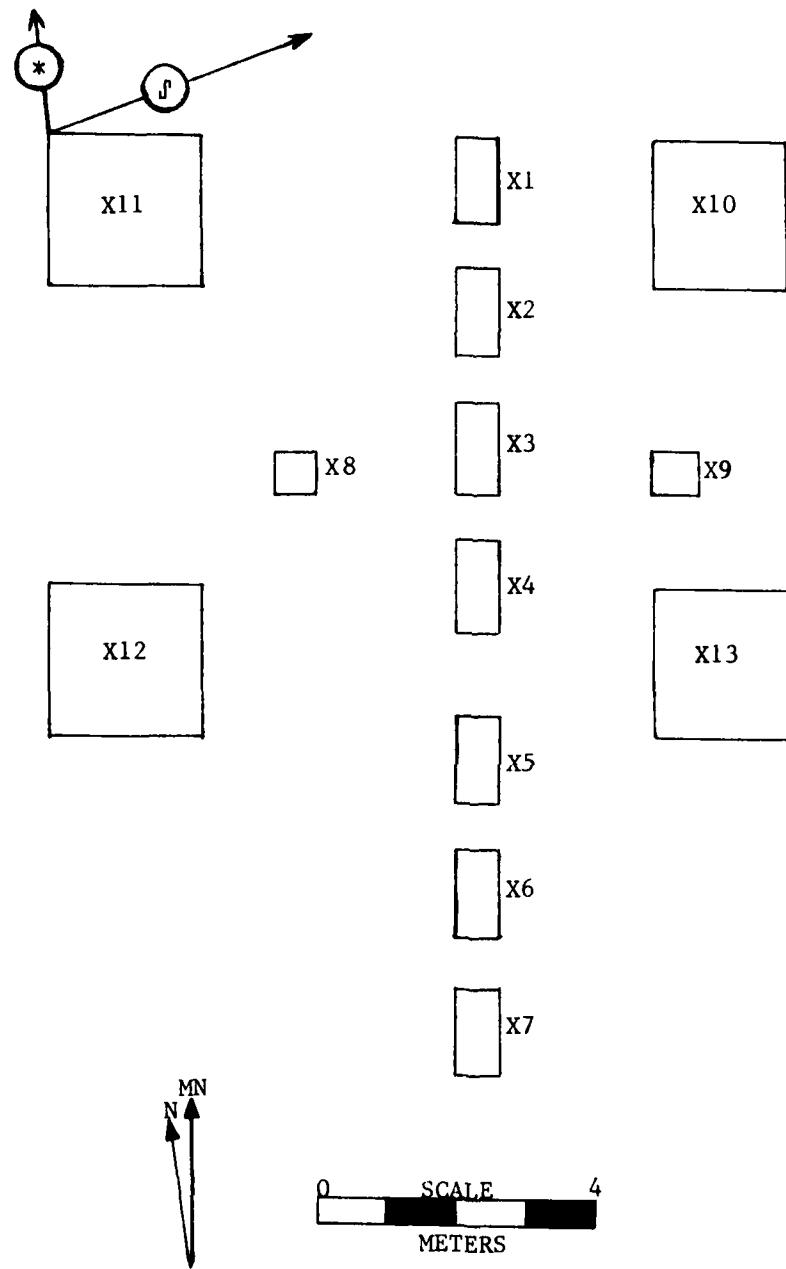
Unfortunately, no intact subsurface structural remains were encountered at A791 even though the excavation units were centered in the daub concentration, at least as the latter was revealed on the surface. A few artifacts and a sparse scatter of daub were found in the plow zone and the initial 10-20 cm below the base of the plow zone, but no postmolds or any other cultural features were encountered. Daub was comparatively abundant both in and below the plow zone in X10, but even there the daub was relatively loosely scattered.

The major investigations took place at A792. Seven 120 X 60 cm rectangular test pits were initially dug, followed by the excavation of 28 complete 2 m² excavation units and portions of seven others, resulting in a large, more or less square block excavation (see Figure 7). By the end of the investigation, all units within the block excavation had been taken down to a depth of approximately 60 cm below surface.

Interpreted cultural features

Excavations at A792 revealed a plow zone which extended to a depth of 15-20 cm below surface and contained a variety of artifactual material, mostly ceramic and lithic artifacts and small fragments of daub. Underlying the plow zone was a cultural zone approximately 25-35 cm thick, containing the slightly truncated but generally undisturbed remains of a burned Pomona focus house, designated as House 1. The structure was apparently circular or oval in shape, roughly 11 m long and 9 m wide, and oriented in a generally southwest-northeast direction. No entryway was apparent.

House 1: The structural remains consisted primarily of a large oval or crescent-shaped mass of grass-impressed fired-clay daub, designated as F232, overlying a loose scatter of artifactual material, a few shallow trash-filled pits, and a number of cylindrical soil discolorations interpreted as postmolds (see Figure 8). The rather densely packed daub mass ranged from 5-10 cm in thickness and had horizontal dimensions of around 8 X 6 m. Generally, the daub mass was thinnest towards its center and thickest towards its periphery.



LEGEND	
★	22 m due north to centerline of gravel road
J	N77°E; 99 m to center of gravel road T-intersection

FIGURE 6. Map showing location of excavation units at A791, 14CF369

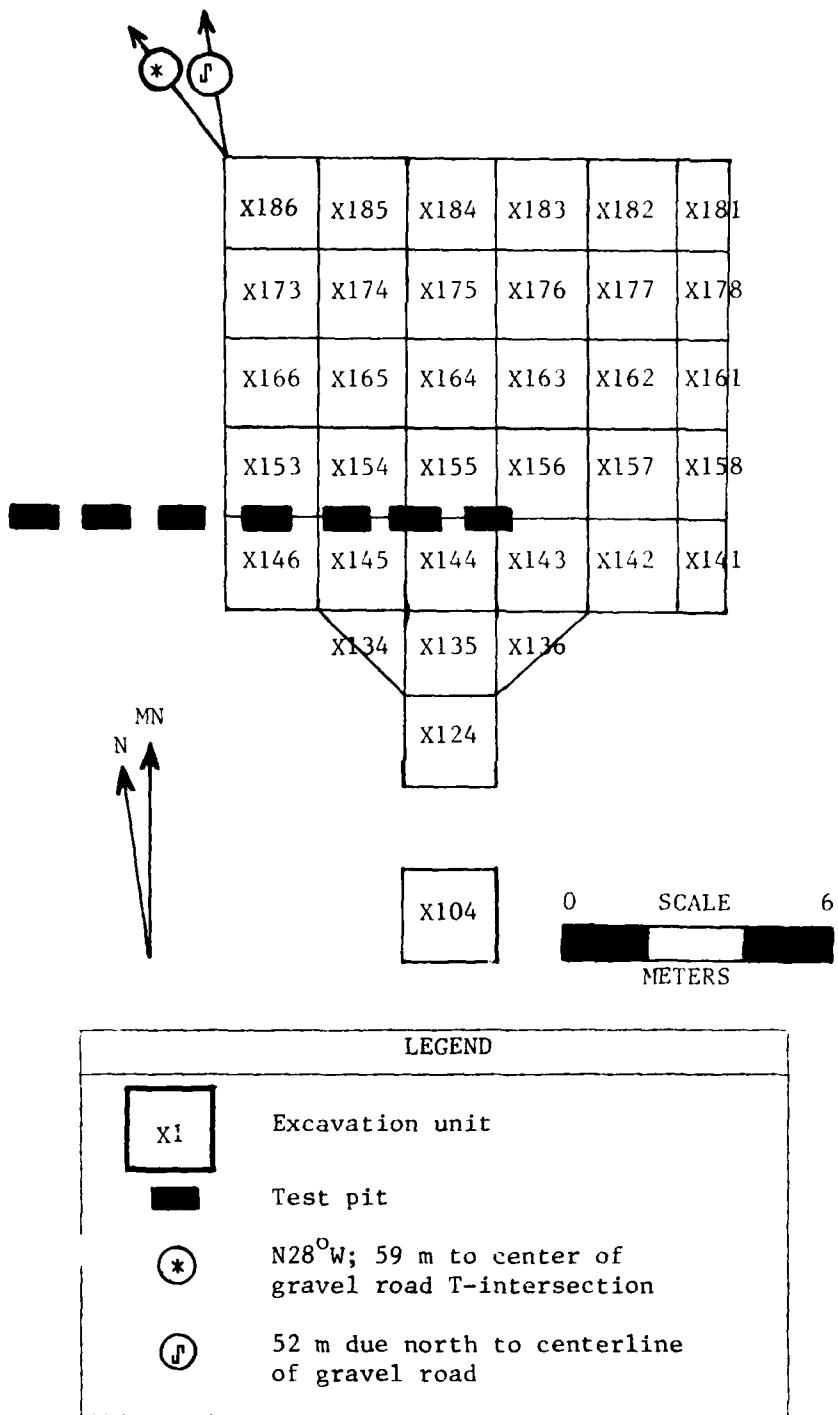


FIGURE 7. Map showing location of excavation units at A792, 14CF369

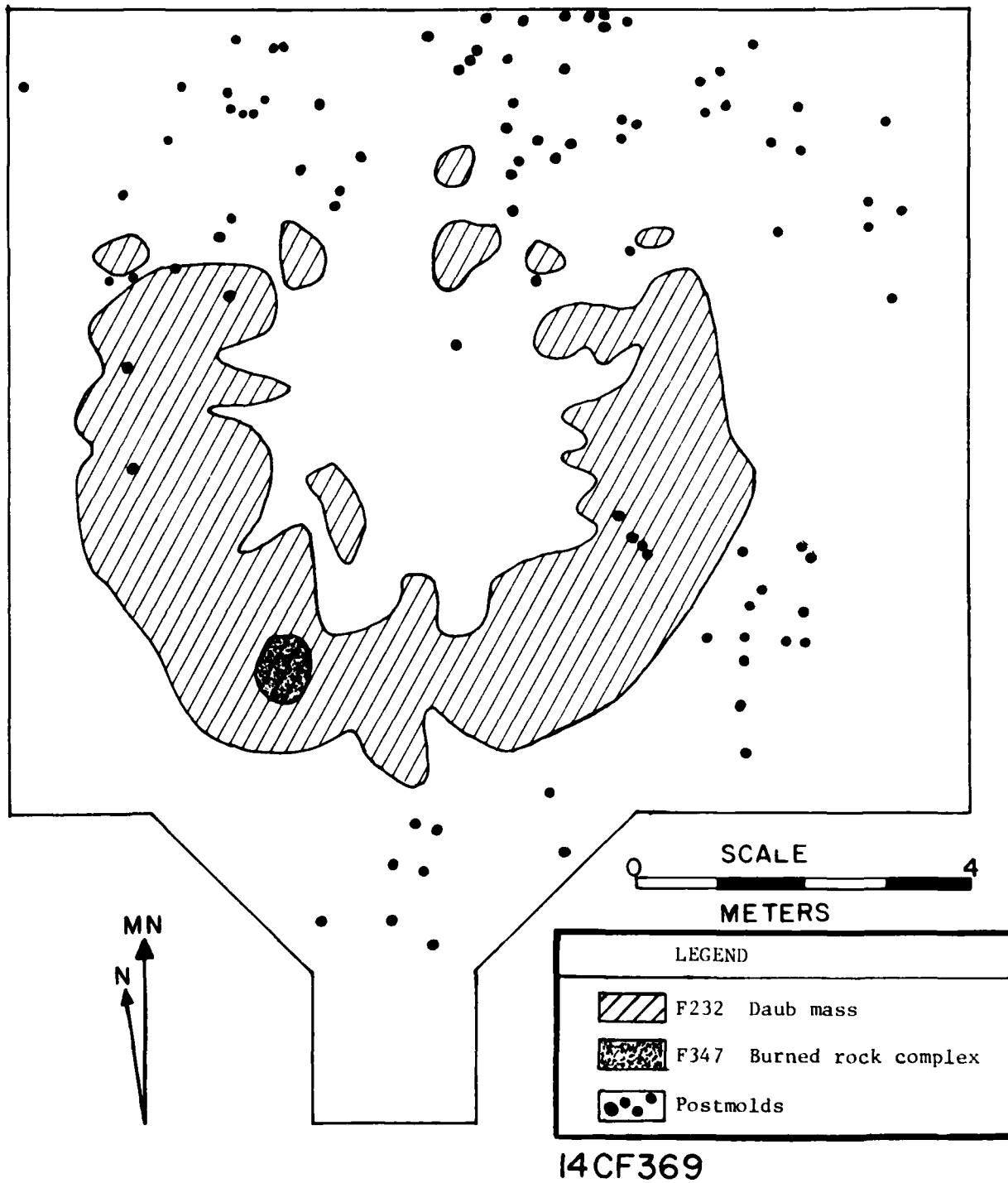


FIGURE 8. Map showing location of daub mass, burned rock complex, and postmolds, House 1, A792, 14CF369.

The features identified as postmolds were defined after a great deal of uncertainty. Generally speaking, the features consisted of small, cylindrical soil discolorations, appropriately located either below or to the side of the daub mass. The tan coloration of the features, describable as 10YR 4/3 using Munsell color charts, made them fairly readily distinguishable from the surrounding dark brown (10YR 5/4) soil matrix.

The discolorations were initially regarded as rodent runs, for two reasons. First, the fill of the discolorations was not generally indicative of decomposed and/or burned posts. The fill was uniformly featureless and usually bereft of any charcoal or humic material whatsoever. Moreover, the color of the fill was markedly at variance with the dark-colored fill encountered previously in postmolds at various other excavated sites in Kansas, fill which was almost always darker than the surrounding soil matrix (Witty, personal communication, 1979; also see, for example, Reynolds 1979:51, or Wedel 1959:180 and 385). Second, inspection of several of the discolorations revealed a configuration common to rodent runs: horizontally linear or crescent-shaped, sometimes "hooking" off to one side with depth.

Consequently, the discolorations were dismissed as non-cultural after the initial observations were made. As the house excavation continued and the daub mass was removed, however, two significant facts became apparent. First, the horizontal distribution of the discolorations clearly approximated the outer edges of the daub mass, clustering in the anticipated area of the house wall. Second, it was found, following the subsequent vertical cross-sectioning and then coring of the discolorations, that the majority were cylindrical in shape and vertical in orientation with flat to slightly depressed floors, a configuration clearly out of keeping with that of most rodent runs.

Consequently, all the remaining discolorations encountered in the excavation were vertically cross-sectioned and/or cored, and their dimensions and provenience recorded whenever appropriate. Approximately a fourth to a third of the discolorations, however, did have rodent-run-like configurations and were rejected as postmolds. The features thus identified as postmolds were found to range generally from 3-10 cm in diameter, and from 2-3 cm up to approximately 16-17 cm in length. The vertical dimensions were in some cases somewhat approximate, since the majority of the features had been truncated by excavation prior to their identification. Nevertheless, it was apparent that a significant number of the postmolds were quite shallow.

Even in retrospect, the identification of the features designated as postmolds remains a problem. Many of the features

were clearly morphologically identifiable as postmolds, and their distributional pattern, although seemingly scattered and haphazard, is consistent with the "...less than ordered wall post pattern and the presence of some interior posts" known from other excavated Pomona focus houses (Witty 1978:60). However, the tan coloration of the features and the presence of so many apparent rodent runs having identical fill characteristics remains to be explained.

At any rate, once the presence of intact structural remains had been verified by the initial testing of the area the subsequent investigation was mainly concerned with exposing the daub mass, as shown in the progress shot on the cover of this report, leaving it *in situ* until the limits of the mass were revealed (see Plate 4), and finally, removing the daub mass and locating other features associated with the house, particularly but not exclusively the postmolds. Several other features were encountered, including one burned rock concentration and several shallow trash pits.

Burned rock concentration: Feature 347 consisted of a small, loose concentration of burned limestone and sandstone, accompanied by ash, limited charcoal flecking, and a slight dark soil discoloration (see Plate 5). The feature was located in the northeast corner of X145 and the southeast corner of X154, near the edge of and under the daub mass and within the periphery of the house as indicated by the putative postmolds. This location seems a bit unlikely for a hearth, due to the apparent proximity of the fire to the south wall of the structure. The rock concentration is almost certainly the remains of a hearth, but its location and the sparse and scattered nature of the remains suggests that it may represent a deposit of trash rather than an *in situ* hearth. Nevertheless, the possibility of an interior hearth should not be ruled out entirely.

Pits: At least four trash-filled pits were defined within the apparent limits of House 1, underlying the daub mass. Generally speaking, the pits were shallow basin-shaped features, with ill-defined limits, containing sparse amounts of artifactual material and daub within a light brown soil matrix. The largest of these features was approximately 3.5 X 2.5 m in size, but contained very little material. It was located more or less in the center of the house floor. Another similar but much smaller feature was located to the immediate northeast, and another was located a short distance to the southeast. The fourth, F324, was located in the southwest corner of X177. F324 was a thin deposit, approximately 85 X 60 cm in horizontal dimensions, containing 18 sherds, five waste flakes, one piece of worked ground sandstone, four small fragments of unworked hematite, and two small, unidentifiable burned bone fragments.

Other than the trash pits and the possible hearths, no other notable cultural features were encountered in the excavation of

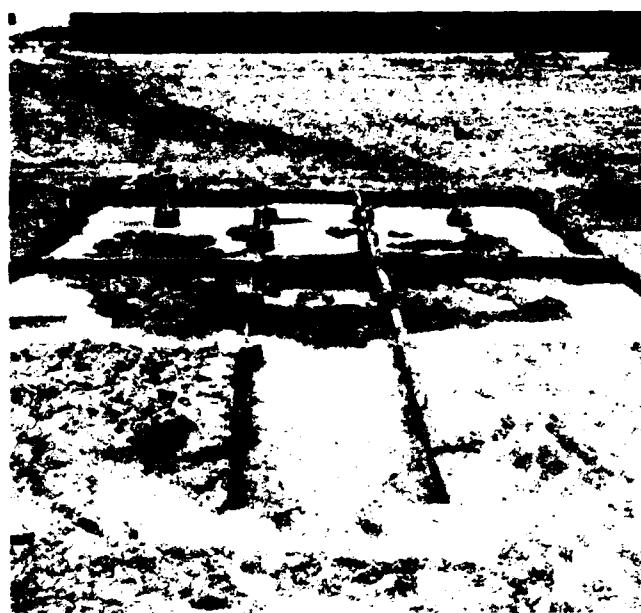


PLATE 4. Daub Mass, F232, House 1, 14CF369. View to north.

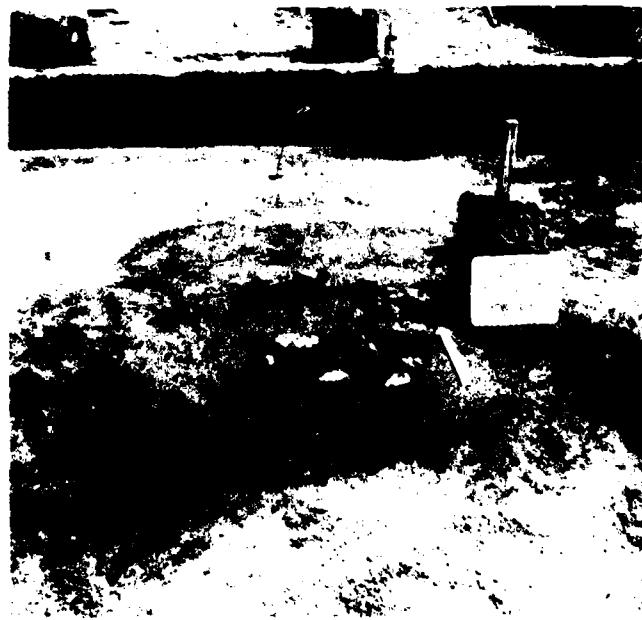


PLATE 5. Burned rock complex, F347, House 1, 14CF369.
View to north-northeast.

the house. Unfortunately, time did not permit an investigation of the surrounding area, where storage pits, borrow pits, and exterior hearths may yet remain beneath the plow zone.

Archeological materials

The archeological materials encountered at 14CF369 consisted of prehistoric ceramic and lithic artifacts, a few faunal remains, burned limestone and sandstone, and a large amount of fired-clay daub. From the surface of the site, all pottery sherds and lithic tools were collected along with most of the lithic debitage and a few pieces of daub. Within the excavation units, all archeological materials other than burned limestone, sandstone, unworked field-chert pebbles, and most of the daub, were collected. At A792, a large sample of the daub contained within F232, primarily the larger pieces and/or those with the most distinct grass or pole impressions, was collected.

The provenience of the material collected from the surface of the site is somewhat confused since several of the surfacing expeditions failed to differentiate between the four areas of the site. Few of the surface remains were diagnostic, however, nor are they particularly numerous especially in comparison with the material recovered in the excavations, the overwhelming bulk of which came from in and around the house at A792. Since the artifacts from the various areas of the site and from both the surface and subsurface levels of the two excavated areas comprise a relatively homogeneous group, apparently representing a single component, the following description treats them as a whole. Whenever pertinent, however, the specific provenience of certain artifacts has been presented.

Ceramic artifacts: A total of 298 pottery sherds, including 23 rim sherds and 275 body sherds, was recovered from 14CF369 along with a large amount of grass-impressed fired-clay daub. The pottery is typologically identifiable as Pomona ware (c.f. Wilmet 1970:29-33). The overwhelming majority of the sherds, 93 percent, including all the rim sherds, came from the main house excavation in A792. In A791, one body sherd was discovered below plow zone, with five body sherds coming from the surface and plow zone of the area. In A792 one rim sherd and eight body sherds were recovered from the surface and nine body sherds from the plow zone, with the remainder coming from below plow zone in and around the house floor. Five body sherds were retrieved from the surface of A793, two from the surface of A794, and seven from the surface of the site in general. All the sherds except two are tempered with indurated clay. The two exceptions, both from A794, are bone tempered.

Surface textures of the sherds are uniformly fine. Core textures range from compact to laminated, with occasional friable examples. Most of the cores are laminated.

Surface treatment of the sherds varies somewhat according to provenience, but the majority have cord-roughened exteriors and plain, often quite lumpy interiors. Approximately 31 percent of the inventory have interiors which have been scraped or wiped, often rather extensively. The percentage is somewhat misleading, however, since many of the plain sherds in the remaining 69 percent are small sized and could quite possibly have come from vessels with scraped or wiped interiors. Almost all the larger sherds in the inventory, including most of the rim and neck sherds, exhibit some scraping or wiping marks on their interiors. On the rim and neck sherds, the markings are horizontally oriented.

At least 73 percent of the sherds have cord-roughened exterior surfaces. The remaining sherds are divided about equally into plain and smoothed-over cord-roughened categories. The cord roughening, at least on the rim and neck sherds, is oriented in a vertical or vertical-oblique direction. Among the body sherds, a few examples of criss-cross cord roughening are observable, but the majority have variably spaced, parallel cord markings. The cord impressions are generally medium gauge in size, and were produced by the use of both S-twist (19 observable examples) and Z-twist (two examples) cord. The nature of the cord twist on most of the sherds was generally obscured due to erosion and/or the low relief of the impressions.

Several sherds with plain exterior surfaces were encountered. Both of the two bone-tempered sherds from A794 were smooth surfaced, on both exterior and interior, as were the five sherds from A793. Two small plain-surfaced rim sherds were found at A792, but cord roughening was clearly the predominant mode of surface treatment at both A791 and A792.

The surface colors of the sherds range from orangish tan and tan to dark brown and gray, with tans predominating. Cores are approximately the same, with brown and gray predominating. Some minor color differentiation was correlated to provenience. The five sherds from A793 have uniform light tan surfaces and light gray cores, and the bone-tempered sherds from A794 are much the same. Only one significant color variation was noted among the sherds from A791 and A792: a single body sherd with a thin, reddish tinged brown exterior surface, possibly representing a red slip, or wash, treatment. The latter was recovered from below plow zone in A792.

Morphologically, only 12 neck sherds and a few of the rim sherds, all from A792, are informative. Generally, the sherds

are indicative of medium-sized, jar types of vessels having high, more or less vertical rims, well-defined and often constricted necks, and sharply expanding, shallowly sloping shoulders. A few of the larger body sherds suggest that the vessels had globular bodies and bases, but this could not be determined with certainty. Likewise, the exact size of the vessels could not be established from the evidence at hand. The body sherds from the site range from 3-11 mm in thickness, with an average of 5.6 mm. Many of the necks are rather thick, ranging from 4-11.5 mm in maximum thickness, with an average of 10.1 mm. Shoulders of the thicker neck sherds are also, correspondingly, rather thick. The rim sherds range from 4.5-10 mm in thickness, with an average of 7.4 mm. Their lips are rounded and often quite narrowed, even pointed, ranging in thickness from 3-5 mm with an average of 3.6 mm.

The only significant morphological variation occurred in the shape of the rims. Most were collared, or incipiently collared, the collared effect being achieved by either thickening the rim at mid-height and constricting the neck by means of more pronounced cord roughening, or by forming the rim into an outwardly bulging, S-shaped curve (see Plate 6). On some rim sherds, those two types of treatment were combined. Those rim sherds with neck junctures have rim heights ranging from 26-43 mm, with an average of 36 mm. The collared effect appears to be the predominant form of decorative/morphological treatment: of the nine rim sherds which are classifiable as straight and vertical rather than collared, almost all are small and relatively uninformative rim fragments lacking neck junctures.

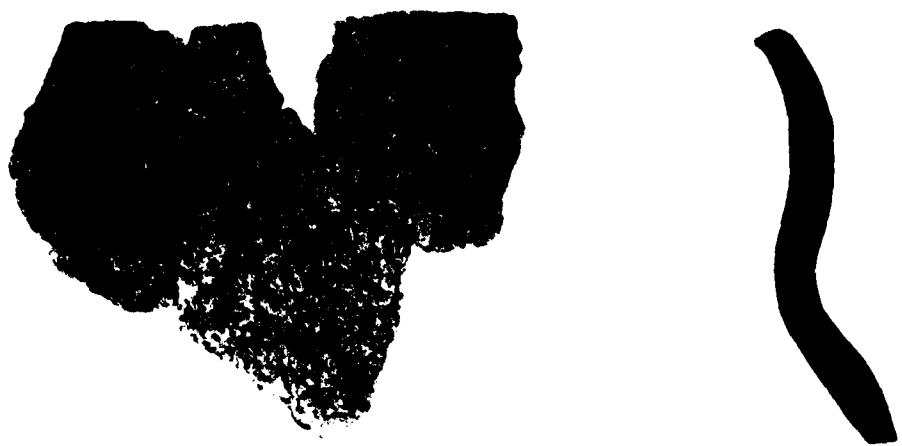
Other ceramic remains found at the site include a large amount of daub, found almost entirely in areas A791 and A792. Most of the daub was contained within the daub mass, F232, at A792. In areas A793 and A794 only a few pieces of burned earth, possibly daub, were found.

The daub is untempered and is uniformly orangish tan and tan in color, with occasional red and black surfaces. The pieces range in size from very small to around fist sized. Generally, they are somewhat slab shaped and exhibit grass impressions and occasional twig or pole impressions on at least one face and occasionally both faces. Daub recovered from the surface of the site, however, is uniformly small and eroded.

Lithic artifacts: Both chipped-stone and ground-stone artifacts were found at 14CF369. The chipped-stone material, while not overly abundant in comparison with other sites, especially other excavated sites, consists of projectile points, endscrapers, a



A



B



PLATE 6. Selected ceramic artifacts from 14CF369.

chopper, bifaces, retouched and utilized flakes, cores and debitage. The ground-stone artifacts are few in number and relatively unworked. Most of the lithic artifacts, and almost all the diagnostic specimens, came from in and around the excavations at A791 and A792, primarily the latter area.

Projectile points: Seven projectile points were recovered from the site. One (Plate 7,A), recovered from the surface of A793, consists of the midsection and basal section of a small, thin, triangular, corner-notched point made of mottled gray chert. The fragment has an expanding stem with a straight base. The artifact has a blade width of 14 mm, a stem width of 7 mm, and a basal width of 10.5 mm, and is 2.5 mm thick. The estimated length of the point is around 30 mm. Typologically, the artifact appears to be representative of the Scallorn projectile point type (c.f. Bell 1960:84).

Two of the points are small, thin, plain, triangular specimens. One (Plate 7,B), made of heat-treated, pinkish gray chert, is medium sized and somewhat elongated in shape. It is rather crudely flaked, and has slightly convex sides. The artifact is 40 mm long, 15.5 mm wide at the base, and 4 mm thick. Typologically, it is identifiable as representative of the Madison projectile point type (c.f. Perino 1968:52). The other point (Plate 7,C), made of tan fossiliferous chert, is smaller and less elongated, and lacks most of its tip. The specimen is 3.5 mm thick and has a basal width of 16 mm. The estimated length is around 22 mm. A very slight unifacially produced notch, apparently the result of accidental breakage, is present on one side of the specimen. Typologically, the artifact appears to be representative of the Fresno point type (c.f. Bell 1960:44). Both of the plain triangular points were found on the site surface, the former at A792 and the latter at A791.

The fourth of the seven points to be described (Plate 7,D), was found below plow zone at A792. It is a small, thin, asymmetrically triangular specimen with single side notches and a subconcave base, made of heat-treated, mottled, gray chert. The tip is missing, but an estimated former length of 23 mm was determined. The extant portion of the artifact is 3.5 mm thick and has a basal width of 14 mm. Typologically, it is identifiable as a representative of the Washita point type (c.f. Bell 1958:98).

Another point (Plate 7,E), recovered from below plow zone at A792, is small, thin, and elongately triangular, with single side notches and a basal notch. Made of tan chert, the specimen is 30 mm long and 4 mm thick, and has a basal width of 15.5 mm. Typologically, an affinity with the Harrell point type (c.f. Bell 1958:30) is apparent.

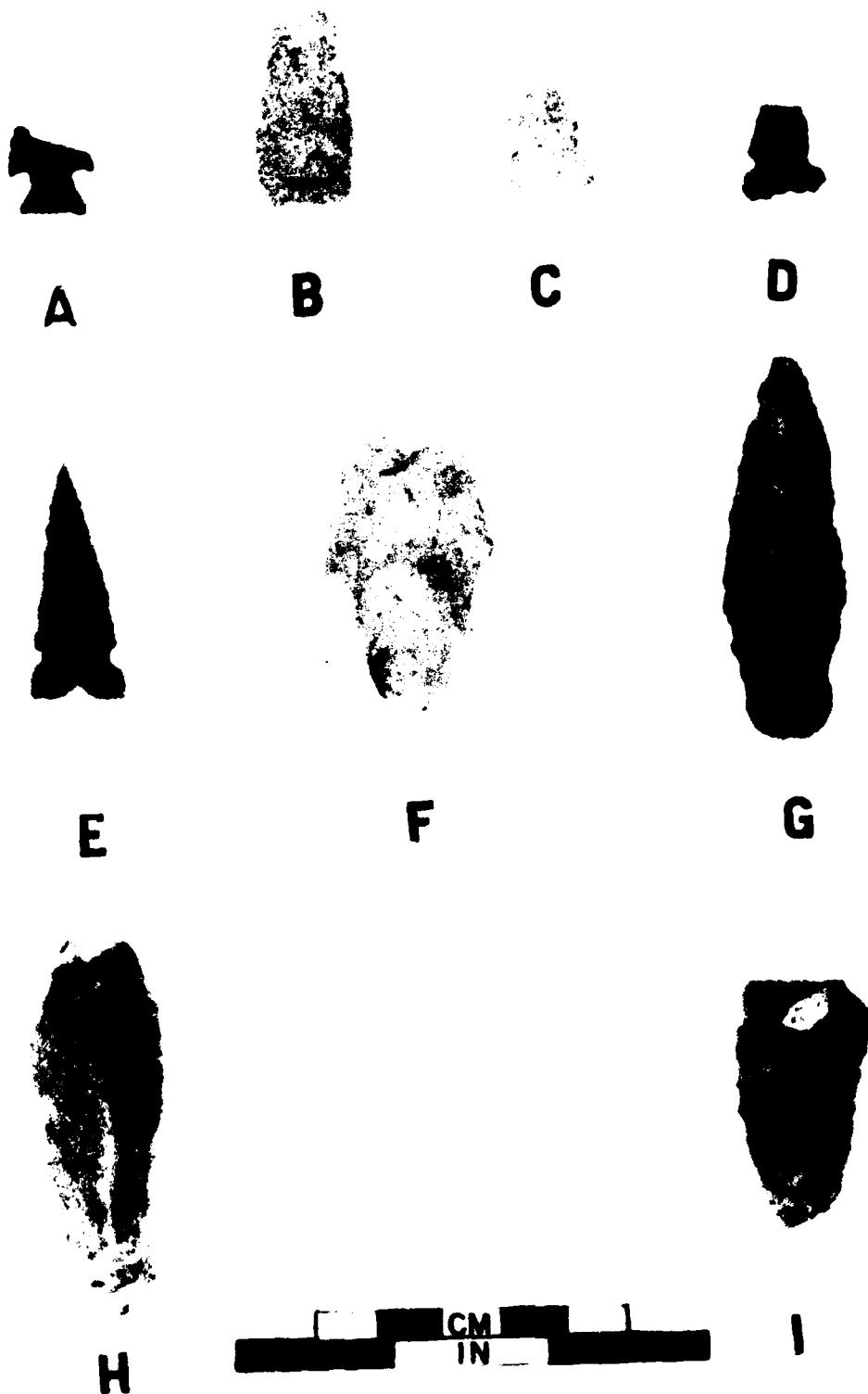


PLATE 7. Selected lithic artifacts from 14CF369.

One other point was also found below plow zone at A792, at the relatively shallow depth of 22 cm below surface in X164. Made of grayish white chert, the specimen (Plate 7,F) has a contracting stem with a convex base. The tip and part of the midsection of the artifact were apparently broken off and the blade then bifacially reworked, resulting in an angular, more or less squared-off tip. The estimated former length is around 65 mm, but at present the artifact is 47 mm long. It is 7 mm thick and has a shoulder width of 28 mm, a stem width of 20 mm, and a stem length of 20 mm. Typologically, the artifact appears to be a representative of the Gary projectile point type (c.f. Bell 1958:28), reworked for use as a cutting tool.

Choppers: One large biface, made of fossiliferous gray chert with white limestone cortex, was recovered from the surface of the site. It is roughly semicircular in shape, with cortex covering one long, unworked, saddle-shaped edge. The opposite, ovate, worked edge has been partially bifacially flaked, but the artifact is essentially unifacial, with rather steep, scraperlike flaking being present along the edge of one face, and only minimal flaking on the other face. The specimen is 112 mm long and 82 mm wide, and has a maximum thickness of 20 mm. Functionally, the nature of the flaking suggests that it may have been used as a scraper, although the size and shape of the artifact are more indicative of a chopper.

Bifaces: A total of 13 bifaces was recovered from the site. Four are from A791, seven from A792, and two from the general surface of the site. Most are made of fossiliferous gray chert, but one tan field-chert specimen and two heat-treated chert specimens are also present in the inventory. Two of the group are tip sections of broken, medium-sized projectile points or knives, and four are midsections or edge fragments of unidentifiable bifaces. Two others are carefully retouched but relatively unshaped flakes. Two others are elongatedly ovate specimens; each is approximately 18 mm wide, with one rounded and somewhat pointed end and one broken end. Three other bifaces of the group are ovately triangular specimens approximately 18-20 mm wide, 35-40 mm long, and 5-6 mm thick, possibly preforms for projectile points of the small, thin, triangular variety.

Endscrapers: Two complete endscrapers and four endscraper fragments were recovered from 14CF369. Three of the six came from below plow zone at A792, two from the surface and plow zone of A791, and one from the surface of the site in general.

Both of the complete specimens (Plate 7,H and I) are made of tan chert, and both are keeled. One has a maximum length of

63 mm, a maximum width of 22 mm, and a maximum thickness of 10 mm. The other measures 35 mm long, 22 mm wide, and 9 mm thick, and has a thick, unfinished butt end.

The four endscraper fragments are all butt ends. Two are keeled and the other two flat. One of the former, made of banded gray chert, has a maximum thickness of 10 mm. The other keeled specimen is 9.5 mm thick, and made of banded tan chert. The two flat specimens, one made of fossiliferous gray chert and one of mottled, tan and grayish white chert, are both 8.5 mm thick.

Retouched flakes: A total of 13 retouched flakes was recovered from 14CF369, eight from A792, one from A791, one from A794, and three from the surface of the site in general. The majority are minimally retouched, probably nothing more than test pieces. One, from the surface of the site, is more obviously shaped than the others and may be an endscraper fragment. The majority of the retouched flakes are made of fossiliferous gray chert. Of the remainder, four are heat treated and two are made of tan chert.

Utilized flakes: A total of 16 utilized flakes was recovered from 14CF369, 13 from A792, two from A791, and one from the surface of the site in general. Six have bifacial utilization wear, while the remainder exhibit unifacial utilization wear. No pronounced concavities are present along the edges of the flakes, and only one has been utilized along all its edges. Nine of the flakes are made of fossiliferous gray chert, and two of the others are heat-treated specimens of the same material. One flake of bluish gray banded chert, one of grayish brown chert, one of heat-treated, finely textured, purplish gray chert, and two of heat-treated, mottled, pink and gray banded chert are also present in the inventory.

Cores: Four small cores or core remnants were recovered from the site, one from A791 and three from A792. The former is light gray banded chert with orangish limestone cortex. One of the latter is fossiliferous gray chert; the other two are remnants of field-chert cobbles. One of the two field-chert cores is a heat-treated, red and dark pink colored specimen. It was found below plow zone in XI56 of the A792 excavation and was accompanied by numerous waste flakes and shatter which had been derived from it. The amount of shatter, and the thick, irregular nature of the flakes, suggest that the core may have "exploded" during heat treatment.

Debitage: A total of 333 pieces of debitage, including 279 waste flakes and 54 pieces of shatter, was collected at 14CF369. The total includes 16 primary, 79 secondary, and 184 blank decortication flakes, and four primary, 34 secondary, and 16 blank pieces

of shatter. The majority of the primary and secondary specimens were derived from field-chert cobbles, but a few specimens of grayish brown chert with orangish limestone cortex, and a few specimens of gray fossiliferous chert with white limestone cortex, are also present in the inventory. Approximately 51 percent of thedebitage appears to have been heat treated. A total of 64 pieces ofdebitage, mostly primary and secondary decortication flakes and shatter, were derived from and found with a heat-treated, red-colored field-chert core recovered from below plow zone in X156 of the A792 excavations. In general, almost three-quarters of thedebitage came from A792, and 90 percent of that material was found below plow zone in the excavations. A total of 59 pieces ofdebitage came from A791, with two flakes being found below plow zone. Eleven pieces ofdebitage were recovered from the surface of A793 and four from the surface of A794. A total of 14 pieces were attributed to the surface of the site in general.

Ground stone: Four pieces of ground sandstone were recovered from 14CF369, along with five small unworked pieces of the same sort of sandstone, a medium-textured, tan to reddish brown material. All were found below plow zone in the A792 excavation. Three of the worked pieces of sandstone are rather small slab-shaped fragments. Each exhibits only one ground face. One of the three has a concavely worked face, the other two are flat. The other piece of ground sandstone is an oblong slab, approximately 135 X 60 mm in size, with one smooth, subconvex-shaped ground face. It was found as part of F324, a loose concentration of material interpreted as a shallow trash pit, and may be the remains of a hand grinding stone, or muller.

Hematite: Three small and four extremely small fragments of hematite were recovered from the site, all from the house floor at A792. The four smaller fragments were found as part of F324, a shallow trash pit. One of the three larger fragments has one flat surface which may have been slightly ground, but on the whole the pieces appear to be unworked.

Faunal remains: The faunal remains encountered at 14CF369 consists of two burned and six unburned bone fragments recovered from the surface of A793, and four burned and ca. 30 unburned bone fragments and two tooth enamel fragments found below plow zone in the house fill at A792. The unburned bone fragments from A792 are the extremely fragmentary remains of a single very weathered bone.

Unfortunately, none of the bone fragments from either area of the site are identifiable. The tooth enamel fragments appear

to be portions of the tooth of a large animal, probably bison, elk, or deer, but are otherwise uninformative.

Summary and conclusions

Site 14CF369 represents the remains of a prehistoric habitation site attributable to the Pomona focus of the Middle Ceramic time period. The cultural affiliation of the site's occupants is inferred from the presence of diagnostic ceramic artifacts along with distinctive structural remains. Structural remains were encountered in two separate areas of the site. At A792, excavations revealed the largely undisturbed remains of a burned, daub-covered, thatched-grass house. At A791, the remains of another such structure appears to have been disturbed by cultivation. In both areas, cultural features such as storage pits and borrow pits may yet remain in primary context below the surface, as they may in the other two areas of the site.

14CF369 is important since it provides a "classic" example of a Pomona focus habitation site, complete with multiple house remains. Since buried cultural features are thought to be present, the site can be regarded as having a great deal of scientific significance and investigative potential, even though the remains have been adversely affected by cultivation and partially destroyed by excavation. Further investigations are likely to be quite productive, although extensive testing will be necessary for the locating of buried features.

Site 14CF370

Site description

Reservoir location: At an elevation of 1060-1070 ft, in the flood control pool, in the Flint Hills National Wildlife Refuge.

Soil type: Dennis silt loam.

Setting: 14CF370 is in the uplands above the right bank of Lebo creek. The more or less T-shaped site covers a relatively large area encompassing approximately one hectare, or two to three acres, on the crest and upper slopes of a broad upland bench and a ridge which projects out from it to the east. The bench, which continues on to the north and southwest of the site, extends out from higher, gently sloping uplands located 800-1600 m to the north-northwest. Lebo creek is located just below the eastern slope of the bench and makes a wide loop around the ridge. The bench and ridge slope rapidly down to bottomland on the south. A north-south-trending fenceline runs through the western (bench) portion of the site. Archeological materials were mainly located east of the fenceline and on the ridge.

Present conditions: The site is in a cultivated field and has been agriculturally terraced. The terracing is confined to the upper slopes rather than the crest of the landform, but the uppermost terrace cut is situated well within the site. The terracing and subsequent cultivation have brought the upland subsoil to the surface across large portions of the site, indicating that most if not all of the site has been destroyed.

Investigations

The site was visited twice during the summer. The investigation consisted of pedestrian survey, the collecting of exposed archeological materials from the surface, the taking of 50 soil probes, and the excavation of three test pits.

The testing was centered in and around two daub concentrations. One of the concentrations is located a few meters east of the fenceline, and the other is located immediately east-northeast of the first. The latter has been bisected by an agricultural terrace. Fifty soil probes were taken from throughout the general site area. One 60 cm² test pit, dug to a depth of 40 cm below surface, was excavated in the center of the westernmost daub concentration. Two test trenches, each 2 m long and 50 cm wide, were excavated in the easternmost daub concentration. The trenches were situated within the terrace cut, perpendicular to its path. Since most of the plow zone had been removed by the construction of the terrace, the trench excavations were mainly a matter of continuing the excavation, down to a depth of ca. 40 cm below the original ground surface. Unfortunately, neither the test excavations nor the soil probes produced any evidence of subsurface cultural manifestations.

Historical research indicated that a building was present somewhere in the vicinity of the site in 1878 (Edwards Brothers 1878:51). The land, and presumably the building, was owned by H.W. Huby.

Archeological materials

The archeological materials encountered at 14CF370 consisted of historic and prehistoric artifacts, daub, shell, bone fragments, and a few scattered chunks of burned limestone. All prehistoric ceramics and lithic tools and all bone and shell fragments were collected, along with a representative sample of the historic material, the prehistoric lithic debitage, and the daub.

Historic artifacts: The historic artifact inventory includes stoneware, earthenware, and whiteware ceramics, and one glass fragment. The latter is virtually uninformative, being only a small, thin, clear, brown-hued fragment.

The stoneware includes one rim sherd and two body sherds with Albany-glazed interiors and salt-glazed exteriors, and one body sherd with a light brown interior glaze and a salt-glazed exterior. Variations in the colors of the exterior glazes of the four suggest that four separate vessels are represented.

One earthenware body sherd was found. Both the exterior and the interior of the sherd exhibits a brownish red lead slip glaze.

The whiteware includes five rim sherds of varying thicknesses, one with a splotchy blue interior decoration of uncertain application and design; and four body sherds. Two of the body sherds are decorated, one with a splotchy black decoration of uncertain application and design and the other with a painted floral design. The rim sherds and the one undecorated body sherd appear to be fragments of cups. The three remaining body sherds are apparently plate fragments.

Prehistoric artifacts: The prehistoric artifact inventory consists of ceramic artifacts, chipped-stone tools and debitage, and one piece of ground hematite.

Ceramic artifacts: Pottery sherds and daub comprise the ceramic inventory. Two rim sherds and 19 body sherds were recovered from the site. All are tempered with indurated clay and are very eroded and oxidized. Surface textures are fine; core textures are laminated or compact. Surface colors range from orange and tan to gray, with orangish tan predominating. Cores are commonly gray and occasionally tan. Surface treatment includes cord-roughened exteriors and plain, lumpy interiors. Due to the erosion, it was not possible to determine the nature of the cord impressions. Judging from one of the rim sherds, the cord roughening was vertically oriented, at least on the rim of the vessel. No decoration is observable on any of the sherds.

Morphologically, the sherds are relatively uninformative. The larger of the two rim sherds, the only one with a neck, indicates that a slightly out-curving rim was present over a relatively well defined neck. The rim height on the specimen is 36 mm. The lips on the two rim sherds are narrowed and rounded, and about 4 mm thick. The larger rim sherd is 7 mm thick at midheight and 9 mm thick at the neck. The body sherds range in thickness from 3.5-9 mm, with an average of 5.5 mm.

In addition to the pottery, 22 pieces of fired-clay daub were collected. All are relatively eroded, but the majority exhibit discernible grass and/or twig impressions. The surface colors of the pieces range from orange and tan to gray, with oranges and tans predominating. No tempering is evident on any of the pieces.

Lithic artifacts: The lithic inventory consists of both chipped-stone and ground-stone specimens. The chipped stone includes projectile points, an alternately beveled knife, a drill, bifaces, an endscraper, unifaces, retouched and utilized flakes, cores, and debitage. The ground stone includes two hammerstones and a piece of ground hematite.

Two projectile points were found. One, produced from heat-treated, mottled, pink and white chert, consists of the stem and midsection of a medium-sized stemmed point. Although much of the blade is missing, it appears to have been subtriangular in shape with slightly convex sides, and definite but not prominent barbs. The point had an expanding stem formed by corner notching, with a subconvex base. The shoulder width is 35 mm, the stem width 21 mm, and the basal 27 mm. The stem length is approximately 10 mm, and the artifact is 11 mm thick. No exact typological affinities are inferred for the specimen.

The other of the two points is represented by only the stem section of an expanding-stemmed point, made from a heat-treated, finely textured, pink chert. The stem has a subconvex base, one tang of which has been worked into a sharp, pointed projection. The stem is fairly short, with a length of approximately 8 mm. It is 6 mm thick, with a stem width of 19 mm and a basal width of 25.5 mm. No typological affinities were inferable due to the fragmentary condition of the specimen.

One half of a diamond-shaped, alternately beveled knife was found at the site. It was made from a mottled, fossiliferous pink and gray chert. The knife is 25.5 mm wide and 6 mm thick.

One drill, made of fossiliferous gray chert, was retrieved from the site. It is incomplete, consisting of only the base, or stem, and part of the midsection. The drill is T-shaped and slightly asymmetrical. It has a basal width of 25 mm and a midsection bit width of 11.5 mm. The stem length is around 11 mm, with some variation due to the asymmetry. The midsection of the artifact is 6.5 mm thick.

Nine bifaces were collected at the site. One, made of heat-treated, gray banded chert, may be a projectile point preform. Ovately triangular and somewhat asymmetrical in shape, it is very crudely chipped, with a unifacially produced corner notch on one edge and an incipient corner notch on the other. It is 40 mm long, 23 mm wide, and 7 mm thick.

Two of the bifaces are tip sections of projectile points or knives. One is made of tan chert, and the other of heat-treated, fossiliferous gray chert. The former is 20 mm wide at its widest point and 5.5 mm thick; the latter is 23 mm wide and 6 mm thick. Both have slightly rounded tips.

One of the bifaces, made of fossiliferous, gray chert, is roughly triangular in shape and has alternately beveled edges. The specimen is 39 mm wide and 7 mm thick. It is crudely chipped and has some unthinned edges.

The other five bifaces are even less finished and shaped than the four just discussed. One, made of heat-treated, white chert, has been brought to a point and has one straight edge, one broken convex edge, and an unfinished broken end. Another, made of heat-treated, mottled, tan chert, is roughly ovate in form with crudely chipped, slightly retouched edges. One thin biface, made of mottled, grayish white chert, may be the midsection of a broad biface or knife. It is 37 mm wide and 8 mm thick. The last two bifaces, one of heat-treated, fossiliferous, pink and gray chert and one of white chert, are hemispherical in shape, each with one broken edge. No retouch is evident on either of the two.

One plano-convex endscraper was discovered at the site. Made of fossiliferous gray chert, it has a thick, rectangular, unfinished butt, or proximal end. Except for the base, the scraper exhibits steep unifacial flaking along all its edges. It is not keeled. The scraper is 41 mm long, 30 mm wide, and 10.5 mm thick.

Three chipped-stone artifacts from the site have been classified as unifaces. All three are large pieces, exhibiting steep unifacial flaking along almost all its edges. One, made of fossiliferous gray chert, has an elongated, ovate shape and may have functioned as a side scraper. The presence of a pronounced notch or concavity on the specimen suggests that it may also have been used as a spoke-shave. The second of the three unifaces, made of the same material as the first, is long and narrow, with more or less parallel sides and one broken end. It may be the distal end of an endscraper, but it is relatively thick, 9 mm, and narrow, 21 mm, for its length. The other uniface, made of gray, banded chert with limestone cortex, is rounded and steeply flaked on one end, and broken on the other. It is 36 mm wide and may be a very wide endscraper bit section. It is 8 mm thick, and is not keeled.

Ten retouched flakes were taken from the site. Four are very large, fossiliferous gray chert flakes. The others are all heat treated. One is made of fossiliferous gray chert and the other five of a variety of cherts. All exhibit discontinuous unifacial retouch along portions of their edges, and some have been utilized on other edges.

Ten utilized flakes were recovered. Half the total are fossiliferous gray chert and the other half are heat-treated specimens made from a variety of cherts. Unifacial utilization wear is present on portions of the edges of each. One flake has a shallow, 30-mm-wide concavity which has been unifacially utilized, suggesting use as a spoke-shave.

Cores were quite abundant at the site, 20 being found. They vary in size, but all are irregular in shape. Three of the cores are blank decortication specimens. Of the remainder, 11 are remnants of field-chert cobbles, and six are grayish brown chert with orangish limestone cortex.

Debitage was also quite abundant. A total of 372 pieces of debitage, including 331 waste flakes and 41 pieces of shatter, were collected. The total includes 19 primary, 34 secondary, and 278 blank decortication flakes, and four primary, 21 secondary, and 16 blank pieces of shatter. Most of the debitage was fossiliferous gray chert, with the majority of the secondary and primary specimens being derived from field chert. Nine percent of the total, however, is grayish brown chert with orangish limestone cortex. Approximately 19 percent of the debitage appears to have been heat treated.

Ground stone: Two hammerstones and one piece of hematite were found at the site. One of the hammerstones is a small, oblong, field-chert cobble and the other is a fist-sized, somewhat irregularly shaped, well-rounded cobble of dense tan sandstone. The first exhibits battering on only one end; the latter has been used along several of its more protruding surfaces.

One small hematite fragment was also recovered from the site. The fragment exhibits grinding striations on one face, but does not appear to have been intentionally shaped. It may have served as a source of pigment.

Faunal remains: One small bone fragment was collected. It is unburned and relatively nondiagnostic, probably the fragment of a long bone of a large animal. It is quite possible that the fragment is recent.

Three small mollusc-shell fragments were also found at the site. Both are unburned and unworked and may be recent.

Summary and conclusions

14CF370 is identifiable as representing the remains of an historic Euro-American farmstead and/or dump, possibly deriving from the H.W. Huby farming operation of the 1870s, and the remains of a prehistoric habitation site attributable, on the basis of ceramic evidence, to the Pomona focus of the Middle Ceramic period. The historic component is sparsely represented and is probably the result of chance deposition of artifacts rather than an actual historic occupation. It is not historically significant. The prehistoric component is abundantly represented on the surface, but limited testing failed to produce any evidence of subsurface cultural manifestations. Prehistoric structural remains, in the form of two concentrations of daub, and evidence of hearths, in the form of burned limestone, were both encountered on the surface of the

site. Trash pits may be represented by the presence of faunal remains, although it is possible that those remains are recent in age.

The site is receiving adverse impact from the effects of cultivation, and has been damaged by agricultural terracing. These factors appear to have destroyed most if not all of the site's primary archeological context, judging from the negative testing results as well as the surficial presence of the upland subsoil. For this reason, it is inferred that the site has little or no investigative potential and is unlikely to produce any further archeologically significant information. It thus appears to be lacking in scientific significance.

Site 14CF371

Site description

Reservoir location: At an elevation of 1060-1070 ft, in the flood control pool, in the Flint Hills National Wildlife Refuge.

Soil type: Dennis silt loam.

Setting: 14CF371 is in the uplands above the right bank of Lebo creek. The site covers an area approximately 100 X 150 m in size on the end of a short, easterly pointing upland ridge which is a minor projection of a broad bench extending out from higher uplands located 500-1000 m to the northwest. A minor tree-lined drainage passes along the northern edge of the site and swings to the southeast in the bottomland below. A sizable expanse of bottomland borders the site on the south.

Present conditions: The site is in a cultivated field bordered by trees on the north and south. It is receiving adverse impact from the effects of cultivation, which has brought the upland subsoil to the surface across much of the site. Judging from the presence of the subsoil on the surface, most if not all of the site's primary archeological context has been destroyed.

Investigations

The site was visited on three occasions during the season. The investigation consisted of pedestrian survey, the collecting of exposed archeological materials from the surface, and the excavation of twenty 60 cm² test pits, dug to a depth of 45 cm below surface. The pits were situated in a loose grid pattern over the crest and eastern slope of the ridge. No cultural evidence was found in any of the excavations.

Archeological materials

The archeological materials encountered at 14CF371 consisted of historic and prehistoric artifacts. The historic material was sparse and nondiagnostic, hence only a small representative sample was taken. All prehistoric ceramic artifacts and lithic tools were collected, along with a representative sample of thedebitage.

Historic artifacts: One stoneware body sherd was taken from the site. It has an Albany-glazed interior and exterior.

Prehistoric artifacts: The prehistoric artifact inventory consists of ceramic and lithic artifacts. The latter consists of chipped stone and includes one endscraper, several retouched flakes, cores, and debitage.

Ceramic artifacts: Three body sherds were found at the site. All are tempered with indurated clay, and are somewhat eroded. Surface textures are fine and cores are laminated to contorted. Surface colors are orangish tan and tan. Cores are gray. All three sherds are cord roughened, and have variably spaced, medium-gauge cord impressions of uncertain twist. No decoration was observable on any of the sherds, nor was vessel morphology inferable. The sherds measured 6, 5.5, and 5 mm thick, respectively.

Lithic artifacts: One endscraper, several retouched flakes, cores, and debitage comprise the lithic inventory from the site. The endscraper is plano-convex and keeled and has an abrupt, snub-nosed bit. No cortex is present on the artifact, which is made of fossiliferous gray chert. The artifact is 71 mm long, 25 mm wide, and 12 mm thick.

Five retouched flakes were collected. Four are made of fossiliferous gray chert and the other is made of heat-treated, mottled, orange, white, and gray chert. Retouching is of minor extent on all five flakes. One exhibits retouch along the majority of its edges.

Three cores were found. One was produced from a small field-chert cobble, another small core was made of fossiliferous gray chert with white limestone cortex, and the other, the largest of the three, was made of grayish brown chert with orangish tan limestone cortex. All three cores are irregular in shape.

A total of 27 pieces of debitage, including 20 waste flakes and seven pieces of shatter, was retrieved from the site. The total includes one primary, two secondary, and 17 blank decortication flakes, and three secondary and four blank pieces of shatter. Two of the waste flakes and two of the shatter were of the same

grayish brown chert as the largest of the three cores. The majority of the primary and secondary specimens were derived from field-chert cobbles. Approximately 41 percent of thedebitage appears to have been heat treated.

Summary and conclusions

14CF371 represents the remains of an historic Euro-American farmstead and/or dump, and the remains of a prehistoric camp site attributable, on the basis of limited but relatively diagnostic ceramic evidence, to the Pomona focus of the Middle Ceramic time period. The historic component is but sparsely represented, and probably derives from the chance deposition of artifacts rather than an actual occupation. It is not historically significant. No structural remains or evidence of any other cultural features were encountered at the site, and limited testing produced no evidence of subsurface cultural manifestations.

The site is receiving adverse impact from the effects of cultivation. Judging from the amount of subsoil brought to the surface of the site, as well as the negative testing results, most if not all of the site's primary archeological context has been destroyed. The site thus appears to have little or no investigative potential and is unlikely to yield any further archeologically significant information. It cannot be regarded as being scientifically significant.

Site 14CF372

Site description

Reservoir location: At an elevation of 1050-1060 ft, in the flood control pool, in the Flint Hills National Wildlife Refuge.

Soil type: Verdigris silt loam.

Setting: 14CF372 is in the bottomland on the immediate right bank of Lebo creek. The site covers an area approximately 200 X 300 m in size on a broad alluvial knoll. Minor tree-lined drainages form the northern and southern boundaries of the site and a shallow swale marks the western boundary. Lebo creek lies to the immediate east of the site.

Present conditions: The site is in a cultivated field and is receiving adverse impact from the effects of cultivation and occasional flooding.

Investigations

The site was visited on three occasions during the summer. The investigation consisted of pedestrian survey, the collecting of exposed archeological materials from the surface, and the excavation of 21 test pits. The pits were 60 cm² in size and 45 cm deep. They were situated in a loose grid pattern across the crest and slopes of the knoll. Three of the test pits each yielded an unburned bone fragment from below the plow zone, at a depth of 30 cm below surface. In one other pit, charcoal flecking was encountered at the base of the plow zone at a depth of 16 cm below surface.

Archeological materials

The archeological materials encountered at 14CF372 consisted of prehistoric chipped-stone and ground-stone artifacts, and bone fragments. All the material encountered at the site was collected.

Chipped stone: One endscraper, one knife fragment, one biface, one retouched flake, three utilized flakes, and three waste flakes were found at the site.

The endscraper is triangular in shape, with a pointed butt, or proximal end, and an angular, almost straight-edged bit end. It is plano-convex in longitudinal cross-section and flat in transverse cross-section. Made of heat-treated, pink chert, the artifact is 37.5 mm long, 21 mm wide at the bit, and 6.5 mm thick.

The knife fragment is the midsection of a diamond-shaped, alternately beveled knife. The fragment is 36 mm wide at its widest point, and 9 mm thick. It is made of fossiliferous gray chert.

One biface, made of heat-treated, fossiliferous gray chert, was found at the site. One end of the more or less elongated tool is broken. The other end is rounded, with all unbroken edges being bifacially worked with little if any retouch. The artifact is 35 mm wide at its widest point, and 9.5 mm thick.

One retouched flake was found. It is rectangular in shape, and has one end broken off. It is made of heat-treated, pink chert. Both of the two long edges of the piece have been unifacially retouched, and those edges, as well as the one unbroken short edge of the flake, exhibit heavy bifacial utilization wear as well.

Three utilized flakes, all of heat-treated chert, were collected from the site. Two are rather small flakes which have been utilized along two of their edges, but the third and slightly larger flake has been extensively unifacially utilized along almost all its edges.

Three blank decortication waste flakes comprise thedebitage found at the site. One is made of fossiliferous gray chert and the other two are made of heat-treated, pinkish white chert.

Ground stone: The ground-stone artifact inventory consists of one specimen, the fragment of a ground-stone pipe. Visual inspection of the fragment, and comparison with similar pipes in the Society's collections, indicates that the pipe was made of a red, catlinite-like siltstone. The source is unknown but is probably from within the Kansas region. The fragment is from one side of the distal, or anterior, end of an elbow-style pipe, to use West's (1934:278-283) terminology. The stem base, or platform section of the pipe, is rounded, with an apparent diameter of approximately 12 mm. A short, blunt, projection extends past the bowl. A portion of the bowl cavity, measuring 3.5 mm in diameter, is present on the broken interior face of the fragment. The cavity is cylindrical in shape with a rounded base. Grinding striations are present on the exterior surface of the fragment, but little or no polishing is evident.

Faunal remains: A total of six small unburned bone fragments and one small tooth fragment was found at the site, on the surface and in the test pits. One of the bone fragments is part of the articular surface of a long bone of a large animal. The remainder, along with the tooth fragment, are so small and fragmentary as to be uninformative.

Summary and conclusions

14CF372 is identifiable as representing the remains of a prehistoric camp site attributable to one of the Middle Ceramic or Late Ceramic cultural complexes. The cultural affiliation of the site's occupants is most likely with the Pomona focus, but in lieu of ceramic evidence a less specific identification seems warranted. The age of the component is inferred from the topographic setting and the artifact inventory. Topographically, it is unlikely that preceramic remains would be found on the surface of the easily flooded and relatively uneroded Holocene-age landform. In terms of the artifact inventory, two specimens, the knife and the pipe fragment, are temporally diagnostic. The alternately beveled, diamond-shaped knife is a common tool form of the Middle and Late Ceramic periods, and redstone pipes, although they occur in the Middle Ceramic, are identified for the most part with Late Ceramic and Historic cultural complexes.

No structural remains or evidence of any other cultural features were encountered at the site. Limited testing revealed the presence of a few scattered unburned faunal remains beneath the plow zone, but failed to produce any definite evidence of subsurface cultural manifestations.

The site has been adversely affected by cultivation. Judging from the largely negative testing results, the site has little or no investigative potential and is unlikely to yield any further archeologically significant information. It can thus be regarded as having little or no scientific significance.

Site 14CF373

Site description

Reservoir location: At an elevation of 1060-1070 ft, in the flood control pool, in the Flint Hills National Wildlife Refuge.

Soil type: Dennis silt loam.

Setting: 14CF373 is in the uplands above the right bank of Lebo creek. The site covers an area at least 60 X 60 m in size but may extend somewhat further to the west into a grass-over area which could not be adequately inspected due to the vegetation. The site is on the end of a minor, southeasterly pointing upland ridge which is part of a broad bench extending out from higher, gently sloping uplands located 300-600 m to the northwest. A minor drainage lies to the immediate south and southwest of the site. To the east and northeast the ridge drops down to bottom-land. A north-south-trending fenceline cuts across the site. Archeological materials were found in the cultivated eastern portion of the site and in a cattle trail a few meters away in the grassed-over portion of the site.

Present conditions: The eastern half of the site is under cultivation. The western half is covered by grass and has been cultivated in the past. Cultivation and subsequent erosion has brought the upland subsoil to the surface across most of the eastern half of the site.

Investigations

The site was visited twice during the summer. The investigation consisted of pedestrian survey and the collecting of exposed archeological materials from the surface.

Archeological materials

The archeological materials encountered at 14CF373 consisted of one historic and several prehistoric artifacts, faunal remains, and small chunks of unturned limestone rock. The historic artifact and all prehistoric ceramics and lithic tools were collected, along with a representative sample of the lithicdebitage.

Historic artifacts: One stoneware body sherd was found. It has an Albany-glazed interior and a salt-glazed exterior.

Prehistoric artifacts: The prehistoric artifact inventory consists of pottery sherds and chipped stone. The latter category includes a knife fragment, an endscraper, retouched and utilized flakes, cores, and debitage.

Ceramic artifacts: Four eroded and oxidized body sherds were found. All are tempered with indurated clay. Surface textures of the sherds are fine. The cores are laminated to compact, although determination was difficult due to the erosion of the edges of the specimens. Surface colors range from orangish tan to gray. Cores are tan and gray. The surface treatment consists of cord-roughened exteriors and plain interiors, but the nature of the cord impressions could not be determined due to the erosion. No decoration is present on any of the four sherds. They range from 5-7 mm in thickness but are otherwise uninformative concerning vessel morphology.

Lithic artifacts: A knife fragment, an endscraper, retouched and utilized flakes, cores, and debitage were found at the site. The knife fragment consists of one end of an alternately beveled, apparently diamond-shaped knife. It is made of heat-treated, mottled, pink and white chert and is 19 mm wide at the point of breakage and 5 mm thick.

The endscraper is made of heat-treated, gray chert. The tool is plano-convex and keeled, with a snubnosed bit and a thick, squared-off, unfinished proximal end. The artifact is 31.5 mm long, 22.5 mm wide at the bit, and 7 mm thick.

Two retouched flakes were found. One is possibly a fragment of a broken endscraper, but the other is simply a flake which has been unifacially retouched on one edge. The former is made of gray chert, and the latter of fossiliferous gray chert with white limestone cortex.

Four utilized flakes were recovered. All exhibit unifacial utilization wear along two or three of their edges. One is made of fossiliferous gray chert, one of gray chert, one of heat-treated white chert, and one of tan and gray banded chert.

Four cores were retrieved from the site. All are irregular in shape. One core, the only blank decortication specimen of the group, is made of heat-treated, fossiliferous gray chert. Two cores are made of field-chert cobbles, one of which has been heat treated. The other core is made of grayish brown chert with orangish limestone cortex.

A total of 28 pieces of debitage, including 21 waste flakes and seven pieces of shatter, was collected at the site. The total consists of one primary, two secondary, and 18 blank decortication flakes, and one primary, two secondary, and four blank pieces of shatter. One of the flakes and two of the shatter are of the same material as the grayish brown chert core with orangish limestone cortex. The remainder of the debitage is varied. Approximately 28 percent of the debitage appears to have been heat treated.

Faunal remains: One eroded, burned bone fragment was found at the site. It is so small as to be virtually uninformative, but appears to be the fragment of a long bone of a large animal.

Summary and conclusions

14CF373 is identifiable as representing the remains of an historic Euro-American farmstead and/or dump, and the remains of a prehistoric camp site attributable to the Pomona focus of the Middle Ceramic period on the basis of limited but relatively diagnostic ceramic and lithic evidence. The historic component is sparsely represented and is probably the result of chance deposition of the one artifact rather than an actual occupation. It is not historically significant. No historic or prehistoric structural remains or any clearcut evidence of any other cultural features were encountered at the site.

The site has been adversely affected by cultivation, in both the presently cultivated eastern portion of the site and the grassed-over western portion. Judging from the amount of subsoil on the surface of the eastern portion, it is likely that most if not all of the site's primary archeological context has been destroyed. The site thus appears to have little or no investigative potential and is considered unlikely to yield any further archeologically significant information.

Site 14CF374

Site description

Reservoir location: At an elevation of 1050-1060 ft, in the flood control pool, in the Flint Hills Wildlife Refuge.

Soil type: Verdigris silt loam.

Setting: 14CF374 is in the bottomland on the right bank of Lebo creek. The site covers an area approximately 100 X 200 m in size but may extend into a forested area to the east. The site is situated on two broad alluvial knolls which are separated by a prominent swale. Another swale forms the northern, western, and southern boundaries of the site. The two knolls merge along the eastern edge of the field and continue to the east into a forested

area which extends some 30-40 m further east to the creek. Archeological materials were mainly found on the southernmost of the two knolls.

Present conditions: The site is in a cultivated field and is receiving adverse impact from the effects of cultivation and occasional flooding.

Investigations

The site was visited on three occasions during the summer. The investigation consisted of pedestrian survey, the collecting of exposed archeological materials from the surface, and the excavation of 20 test pits. The pits were 60 cm² in size and 45 cm deep. They were located in a loose grid pattern on the crest and slopes of the southernmost knoll, designated for control purposes as Area 791. No cultural artifacts or features were encountered in any of the excavations.

Archeological materials

The archeological materials encountered at 14CF374 consisted of prehistoric lithic artifacts, faunal remains, and a few scattered chunks of burned limestone. The bulk of the material was located on Area 791, the southernmost of the two knolls of the site. All archeological materials other than the limestone were collected.

Lithic artifacts: The artifact inventory consists of five retouched flakes and seven pieces ofdebitage. Three of the retouched flakes are very small and thin, with careful retouch being found on most of their edges. Two of the three are made of heat-treated pink chert, and the other is made of heat-treated bluish gray chert. The other two of the five retouched flakes, one of gray chert and one of coarsely textured pink chert, exhibit retouch along only one or two of their edges, along with unifacial utilization wear along others.

A total of seven pieces ofdebitage, including six waste flakes and one piece of shatter, were found. The total includes one secondary and five blank decortication flakes, and one blank piece of shatter. Only two of thedebitage appear to have been heat treated.

Faunal remains: Eight bone fragments, one of which is burned, were found at the site. One fragment displays an articular surface, and the majority of the specimens appear to be fragments of long bones of a large animal. The remainder, including the burned bone fragment, are uninformative.

Summary and conclusions

14CF374 is identifiable as representing the remains of a prehistoric camp site of indeterminate age and cultural affiliation. The site is sparsely represented. No structural remains were encountered, but evidence of hearths, in the form of a few scattered chunks of burned limestone, were found. Limited testing, however, failed to produce any evidence of subsurface cultural manifestations.

The site has been adversely affected by cultivation which, judging from the negative testing results, has likely resulted in the destruction of most if not all of the site's primary archeological context. The site thus appears to have little or no investigative potential and is unlikely to yield any further archeologically significant information.

Site 14CF375

Site description

Reservoir location: At an elevation of 1045-1055 ft, in the flood control pool, in the Flint Hills National Wildlife Refuge.

Soil type: Verdigris silt loam.

Setting: 14CF375 is in the bottomland on the right bank of Lebo creek. The site covers an area approximately 150 X 50 m in size on a relatively narrow alluvial ridge near the base of the valley wall, at some distance from the creek. A minor forested drainage lies to the west, at the immediate base of the uplands. The site is surrounded on all other sides by shallow swales, one of which separates this site from 14CF374, located to the southeast.

Present conditions: The site is in a cultivated field and is receiving adverse impact from the effects of cultivation and occasional flooding.

Investigations

The site was visited on two occasions during the summer. The investigation consisted of pedestrian survey and the collecting of exposed archeological material from the surface.

Archeological materials

The archeological materials encountered at 14CF375 consisted of prehistoric chipped-stone artifacts. All artifacts encountered at the site were collected. The inventory consists of retouched and utilized flakes, anddebitage.

Two retouched flakes were found. One, a blank decortication specimen made of heat-treated, pink and gray banded chert, has been shaped into an oblong endscraper-like form, but the presumed bit end is unworked. The specimen is likely an endscraper preform, or a side scraper. The other retouched flake, a secondary decortication flake made of finely textured white chert, is basically unshaped but exhibits unifacial retouch along most all of its edges. One steeply retouched, fan-shaped edge of the artifact, however, is morphologically similar to an endscraper bit.

Four utilized flakes were found. Two are made of fossiliferous gray chert and the other two are made of tan banded chert. The former exhibit bifacial utilization wear, and the latter unifacial wear.

A total of five pieces of debitage were found, including one secondary and three blank decortication waste flakes, and one secondary decortication piece of shatter. Two of the flakes are a very coarsely textured gray chert and the others are fossiliferous gray chert; the shatter and the secondary decortication flake were derived from field chert. Only the shatter appears to have been heat treated.

Summary and conclusions

14CF375 is identifiable as representing the remains of a prehistoric camp site of indeterminate age and cultural affiliation. The site is sparsely represented, with no evidence of structural remains or any other cultural features.

The site has been adversely affected by cultivation, but due to its bottomland location it is possible that buried remains may be present. Testing will be necessary to determine the scientific significance of the site.

Site 14CF376

Site description

Reservoir location: At an elevation of 1055-1070 ft, in the flood control pool, in the Flint Hills National Wildlife Refuge.

Soil type: Dennis silt loam.

Setting: 14CF376 is in the uplands above the right bank of Lebo creek. The site covers an area approximately 150 X 150 m in size, but probably extends into a grassed-over area to the west which could not be adequately inspected due to the thickness of the vegetation. The site is situated on the end of a broad, low-lying, gently sloping, easterly pointing upland ridge which is part of a

broad bench extending out from higher uplands located 200-400 m to the west. A minor forested drainage passes along the north edge of the site before swinging to the south and then east into Lebo creek in the bottomland below. An even smaller drainage, or swale, lies to the south and southwest of the site.

Present conditions: All of the site has been affected by cultivation, but only the eastern portion is presently under cultivation. A north-south-trending fenceline cuts through the approximate middle of the site, separating the grassed-over area on the west from the cultivated field on the east. Cultivation and erosion have brought the upland subsoil to the surface across much of the site, indicating that most if not all of its primary archeological context has been destroyed.

Investigations

The site was visited twice during the season. The investigation consisted of pedestrian survey and the collecting of exposed archeological materials from the surface of the cultivated portion of the site.

Archeological materials

The archeological materials encountered at 14CF376 consisted of prehistoric chipped-stone artifacts, all of which were collected. The inventory consists of one thin biface and three pieces ofdebitage. The biface is the tip section of a projectile point or knife. The triangular, sharply pointed fragment is made of finely textured white chert and is quite thin, only 2 mm thick. It is 10.5 mm wide at the point of breakage, with a present length of 14 mm. The size and shape of the specimen suggest that it was part of a small, thin, triangular projectile point of the type common to the late prehistoric. Unfortunately, this inference cannot be verified due to the lack of a base or evidence of notching.

The debitage consists of two waste flakes and one piece of shatter. One of the flakes is a secondary decortication specimen and the other is blank; the shatter is a primary decortication specimen. Both the shatter and the secondary decortication flake were derived from field chert; the shatter appears to have been heat treated.

Summary and conclusions

14CF376 is identifiable as representing the remains of a prehistoric camp site of indeterminate age and cultural affiliation. The site is sparsely represented, with no evidence of structural remains or any other cultural features.

The site has been adversely affected by cultivation in both the presently cultivated eastern portion and the grassed-over western portion. Judging from the presence of the upland sub-soil on the surface of the cultivated portion, most if not all of the site's primary archeological context has likely been destroyed. The site thus appears to have little or no investigative potential and is unlikely to yield any further archeologically significant information.

Site 14CF377

Site description

Reservoir location: At an elevation of 1050 ft, in the flood control pool, in the Flint Hills National Wildlife Refuge.

Soil type: Verdigris silt loam.

Setting: 14CF377 is in the bottomland on the immediate right bank of Lebo creek. The site covers an area approximately 150 X 150 m in size on a broad, low-lying alluvial knoll just upstream of the confluence of Lebo creek and a minor forested drainage. The creek forms the eastern and southeastern boundaries of the site, and the drainage forms the western and southwestern boundaries. A shallow swale lies to the immediate north of the site.

Present conditions: The site is in a cultivated field and is receiving adverse impact from the effects of cultivation and occasional flooding.

Investigations

The site was visited twice during the season. The investigation consisted of pedestrian survey and the collecting of archeological materials from the surface.

Archeological materials

The archeological materials encountered at 14CF377 consisted of prehistoric chipped-stone artifacts, all of which were collected. The inventory consists of one utilized flake, anddebitage. The utilized flake is made of heat-treated, bluish gray chert. It exhibits unifacial utilization wear along portions of two edges. Thedebitage consists of ten blank decortication waste flakes. The total includes one specimen of heat-treated, red and tan chert, one of finely textured gray chert, and eight of fossiliferous gray chert.

Summary and conclusions

14CF377 is identifiable as representing the remains of a prehistoric camp site of indeterminate age and cultural affiliation.

The site is sparsely represented, with no evidence of structural remains or any other cultural features. It has been adversely affected by cultivation, but due to its bottomland location, buried remains may be present. Testing will be necessary for a determination of the site's scientific significance.

Site 14CF378

Site description

Reservoir location: At an elevation of 1050 ft, in the flood control pool, in the Flint Hills National Wildlife Refuge.

Soil type: Verdigris silt loam.

Setting: 14CF378 is in the bottomland on the immediate right bank of Lebo creek. The site covers an area approximately 150 X 150 m in size on a broad, low-lying alluvial knoll. Lebo creek swings around the northern, eastern, and southeastern edges of the site, and a shallow swale lies to the south and west. The valley wall is approximately 200 m west of the site.

Present conditions: The site is in a cultivated field and is being adversely affected by the effects of cultivation and occasional flooding.

Investigations

The site was visited twice during the season. The investigation consisted of pedestrian survey and the collecting of exposed archeological materials from the surface.

Archeological materials

The archeological materials encountered at 14CF378 consisted of prehistoric chipped-stone artifacts, all of which were collected. The inventory consists of one utilized flake, anddebitage. The utilized flake is made of fossiliferous gray chert, and exhibits minor unifacial utilization wear along one edge. Thedebitage consists of 15 waste flakes and five pieces of shatter. The total includes two primary, three secondary, and ten blank decortication flakes, and one secondary and four blank pieces of shatter. The majority of the flakes are fossiliferous gray chert. Four of the primary and secondary specimens were derived from field chert. One flake, a mottled, reddish chert specimen, appears to have been heat treated.

Summary and conclusions

14CF378 is identifiable as representing the remains of a prehistoric camp site of indeterminate age and cultural affiliation.

The site is sparsely represented, with no evidence of structural remains or any other cultural features. It has been adversely affected by cultivation, but due to its bottomland location buried remains may be present. Testing will be necessary for a determination of the site's scientific significance.

Site 14CF379

Site description

Reservoir location: At an elevation of 1060 ft, in the flood control pool, in the Flint Hills National Wildlife Refuge.

Soil type: Dennis silt loam.

Setting: 14CF379 is in the uplands above the right bank of Lebo creek and, at a somewhat farther distance, the left bank of Troublesome creek. The site covers an area approximately 100 X 100 m in size on the end of a southerly pointing upland ridge which is part of a broad bench extending out from higher uplands located 900-1200 m to the north-northwest. The ridge is the ultimate upland point separating the Lebo creek valley from the Troublesome creek and Neosho river valleys.

Present conditions: The site is mostly forested, with several large old trees. It is cultivated along its periphery, and is bisected by a north-south-trending gravel road. The site has been adversely affected by road construction, including ditching, and by cultivation, which has brought the upland subsoil to the surface across much of the cultivated area of the site.

Investigations

The site was visited on three occasions during the season. The investigation consisted of pedestrian survey and the collecting of exposed archeological materials from the surface.

Archeological materials

The archeological materials encountered at 14CF379 consisted of historic and prehistoric artifacts, faunal material, and mollusc shells, all of which were collected. Most of the material was found on the east side of the gravel road.

Historic artifacts: One stoneware body sherd, two whiteware rim sherds and one whiteware body sherd, and one glass fragment were collected. The stoneware has a smooth, light gray glaze on its exterior and interior surfaces. The whiteware consists of plate fragments. The rim sherds exhibit molded decoration along their

lips, or edges; the body sherd is decorated with a transfer-print decoration of floral design. The glass fragment is clear and turquoise colored, but is otherwise uninformative.

Prehistoric artifacts: The prehistoric artifact inventory consists of chipped stone, including one utilized flake, three cores or core fragments, anddebitage. The single utilized flake is made of gray chert, and displays one unifacially utilized edge. The cores include two blank decortication specimens of grayish brown chert, and one of heat-treated, pinkish brown chert with orangish limestone cortex. One of the former is small but relatively regularly shaped. The other two cores are really little more than large shatter from which a few flakes have been struck.

A total of 37 pieces ofdebitage, including 31 waste flakes and six pieces of shatter, was found. The total includes six secondary and 25 blank decortication flakes, and two secondary and four blank pieces of shatter. The majority of the secondary specimens were derived from field-chert cobbles, but one is grayish brown chert with orangish limestone cortex. Approximately 14 percent of thedebitage appears to have been heat treated.

Faunal remains: Part of the tooth of a large animal such as a cow or bison, primarily the root section of the tooth, was found. It is unburned, and may be recent in age.

Four large mollusc-shell fragments were also found. All four are unburned and may be recent in age.

Summary and conclusions

14CF379 is identifiable as representing the remains of an historic Euro-American farmstead and /or dump, and the remains of a prehistoric camp site of indeterminate age and cultural affiliation. No evidence of structural remains or any other cultural features was encountered. The historic component is sparsely represented and likely derives from the chance deposition of artifacts rather than an actual occupation. It is not historically significant.

The site has been adversely affected by road construction and, along the periphery, by cultivation which has brought the subsoil to the surface. The forested condition of the majority of the site, however, suggests the possibility that the primary archeological context of the prehistoric component may be at least partially preserved. Testing will therefore be necessary for a determination of the site's scientific significance.

Site 14CF380

Site description

Reservoir location: At an elevation of 1050-1060 ft, in the flood control pool, in the Flint Hills National Wildlife Refuge.

Soil type: Verdigris silt loam.

Setting: 14CF380 is in the bottomland on the left bank of Lebo creek. The site covers an area approximately 400 X 150 m in size. It is situated on gently sloping alluvial land, bordered on the west and south by the creek and on the east by the edge of the gently sloping, forested uplands. The northern boundary has been somewhat arbitrarily defined by the presence of an abandoned gravel road and adjacent treeline. Several prehistoric sites, the most important of which is 14CF1310, are located in the uplands 50-200 m to the northeast of 14CF380, along with a recently abandoned farmhouse and associated outbuildings.

Present conditions: The site is in a cultivated field. It has been adversely affected by cultivation and by construction of a farm building during the historic occupation.

Investigations

The site was visited twice during the summer. The investigation consisted of pedestrian survey and the collecting of exposed archeological materials from the surface.

Historical research indicated that a building was present at the location of the now abandoned farmhouse to the northeast of the site in 1878 (Edwards Brothers 1878:51). The land, and presumably the building, was owned by W.G. Clark. The land on which 14CF380 is situated, however, was owned by J. F. King.

Archeological materials

The archeological materials encountered at 14CF380 consisted of historic and prehistoric artifacts, the former including an abundance of small glass, metal, and ceramic fragments, and structural remains in the form of scattered burned and unburned limestone slabs and mortar fragments. The historic materials were concentrated in the western portion of the site and the prehistoric in the eastern. Only the prehistoric materials were collected during the survey.

Prehistoric artifacts: One projectile point fragment, one drill, and two waste flakes were recovered from the site. The projectile point fragment consists of the midsection of a small notched point.

It is made of heat-treated, finely textured gray chert and has been carefully retouched. The blade is triangular and somewhat elongated in shape, with straight sides. The barbs are relatively prominent and slightly downward pointing, suggesting that the point was corner notched or obliquely side notched. The exact nature of the notching, however, as well as the shape of the missing stem, could not be determined from the evidence at hand. The point measures 15 mm wide at the shoulder, or barbs, and 4 mm thick. No clearcut typological identification was therefore inferable for the artifact, but an affinity with the Scallorn projectile point type (c.f. Bell 1960:84) or some other such point type seems likely.

The drill found at the site can be more accurately described as a reworked projectile point preform. It is made of fossiliferous gray chert and is crudely flaked with minimal retouch, mostly bifacially, but in places, unifacially. Morphologically, the artifact is asymmetrically shaped, with rounded shoulders and a moderately expanding stem formed by wide, open, corner notches. The base, probably the most finished part of the tool, is straight in shape and 17 mm wide. The stem width is 15 mm; the shoulder width is 24 mm. The artifact is 7 mm thick. Unfortunately, the majority of the bit, or the "drill" portion of the tool, has been broken off. Judging from the extant portion of the bit, it was lozenge-shaped in cross-section, and apparently somewhat beveled. It is 9 mm wide and 5 mm thick.

The two waste flakes comprising the debitage category include one of fossiliferous gray chert and one of tan field chert. The former is a blank decortication specimen; the latter is secondary. Neither appear to have been heat treated.

Summary and conclusions

14CF380 is identifiable as representing the remains of an historic Euro-American farmstead, possibly deriving from the W.G. Clark or J.F. King farming operations of the 1870s, and the remains of a prehistoric camp site attributable, on the basis of the small amount of lithic evidence, to one of the Early Ceramic or Middle Ceramic cultural complexes. The prehistoric component is sparsely represented and probably nothing more than a minor extension of the better-represented sites in the adjacent uplands to the northeast. No evidence of prehistoric structural remains or any other cultural features was found. The historic component is abundantly represented by both artifactual materials and structural remains but is not historically significant. Judging from the relatively low-lying nature of the terrain, the structure was likely an outbuilding rather than a residence.

The site has been adversely affected by cultivation and by construction of the farm building. It is possible that the historic

building foundation extends beneath the plow zone, but the component is not historically significant and does not warrant any further archeological investigation. The prehistoric component does not appear to be particularly important, but due to the bottomland location of the site it is possible that buried remains may be present. Testing for the presence of subsurface remains will be necessary for a determination of the site's scientific significance.

Site 14CF381

Site description

Reservoir location: At an elevation of 1060-1070 ft, in the flood control pool, partially within the boundaries of the Flint Hills National Wildlife Refuge but extending onto privately owned land as well.

Soil type: Kenoma silt loam.

Setting: 14CF381 is in the uplands above the left bank of Lebo creek. The site covers an area approximately 200 m in diameter on a circular-shaped upland knoll. The knoll is the remnant of an upland ridge lying to the northeast and separated from the knoll by a broad, prominent swale. The ridge, part of a broad bench, extends out from higher uplands located some 300-500 m to the east.

Present conditions: The site is in a cultivated field. It has been adversely affected by cultivation, which has brought the upland subsoil to the surface across most of the site.

Investigations

The site was visited once during the season. The investigation consisted of pedestrian survey and the collecting of exposed archeological materials from the surface.

Archeological materials

The archeological materials encountered at 14CF381 consisted of prehistoric chipped-stone artifacts, including tools anddebitage as well as numerous unworked field-chert cobbles. The latter were likely brought to the site from the neighboring uplands, where they are quite abundant. All tools and a representative sample of thedebitage were collected. The inventory consists of two projectile points, a knife, three crude bifaces, one retouched flake, five cores,debitage, and a hammerstone, almost all made of field chert.

The two projectile points are both of the expanding-stemmed, corner-notched variety. One is complete except for one barb, which was apparently broken off and the shoulder reworked. The other point is missing its tip and one tang. The more complete of the two points is made of heat-treated, fossiliferous pink and gray chert. It is medium in size and has a triangular blade with one straight side and one slightly convex side. As mentioned, one of the barbs is missing. The extant barb is prominent and slightly downward pointing. The blade is 23 mm wide across the shoulder. The stem is 7 mm long, somewhat asymmetrical, and moderately expanding with concave sides. It has one pointed and one rounded tang, and a straight base. The stem width is 13.5 mm and the basal width is 15 mm. The artifact is 7 mm thick and 38 mm long. Typologically, a similarity to the Ellis projectile point type (c.f. Bell 1960:32) is apparent.

The other projectile point is made of heat-treated tan chert. It is small in size and has an elongated, apparently triangular blade with straight sides, the edges of which are sinuous and nearly serrated. The blade measures 17 mm wide at the shoulder. Barbs are well defined but not prominent. The stem is 7 mm long and rapidly expanding, with concave sides and a straight base. The stem width is 9 mm and the basal width is 12 mm. The point is 6 mm thick, with an estimated length of around 42 mm. Typologically, an affinity with the Scallorn projectile point type (c.f. Bell 1960:84) is apparent.

One knife was found. It is made of fossiliferous gray chert and is complete except for a small portion of the tip, the extant portion of which has been rounded and unifacially retouched. Other than at the tip, the knife is bifacially worked and exhibits large percussive flake scars and sinuous edges. Most of the lateral and basal edges of the tool are heavily worn, or have been ground. Morphologically, the knife has an elongated, oblong shape. The artifact is 10 mm thick, 30.5 mm wide, and 84 mm long.

One thin biface fragment and three thick bifaces were recovered. The former is made of grayish brown chert. The latter group includes one biface of tan chert, one of coarsely textured, heat-treated, fossiliferous pink chert, and one of finely textured, heat-treated, red chert. The thin biface exhibits limited retouch along its one unbroken edge, but the three thick bifaces are all crudely flaked and basically unshaped.

Three utilized flakes were found. All three are heat-treated secondary decortication flakes taken from field-chert cobbles. The utilization wear on each is unifacial and of minor extent. One of the flakes is concavely shaped at the point of utilization, suggesting use as a spokeshave.

Five small cores were collected from the site. All are irregularly shaped, with large percussive flake scars. Three are remnants of field-chert cobbles, two of which appear to have been heat treated. The other two cores display limestone cortex. Of the latter, one is made of tan chert and the other of grayish brown chert with orangish limestone cortex.

A total of 93 pieces of debitage, including 72 waste flakes and 21 pieces of shatter, was collected. The total includes ten primary, 30 secondary, and 32 blank decortication flakes, and two primary, 12 secondary, and seven blank pieces of shatter. All the primary and secondary specimens were derived from field chert. Approximately 52 percent of the debitage appears to have been heat treated.

One hammerstone was collected, although several of the more marginally battered and otherwise unmodified field-chert cobbles encountered at the site may also be hammerstones. The collected specimen is a small, circular, somewhat loaf-shaped field-chert cobble which has been extensively battered along most of its more protruding edges.

Summary and conclusions

14CF381 is identifiable as representing the remains of a prehistoric camp site attributable, on the basis of limited lithic evidence, to one of the Early Ceramic or Middle Ceramic cultural complexes. No ceramics, structural remains, or evidence of any other cultural features were encountered. This absence, coupled with the abundance of the debitage and the presence of numerous field-chert cobbles, suggests that the site functioned primarily as a flintknapping station.

Judging from the presence and the amount of the subsoil on the surface of the site, cultivation has destroyed most if not all of the site's primary archeological context. The site thus appears to have little or no investigative potential and can be considered unlikely to yield any further archeologically significant information.

Site 14CF382

Site description

Reservoir location: At an elevation of 1065-1080 ft, at the edge of and above the flood control pool, in the Flint Hills National Wildlife Refuge.

Soil type: Dennis silt loam.

Setting: 14CF382 is in the uplands above the left bank of Lebo creek. The site covers an area approximately 400 X 250 m in size. It is situated on the end of a high upland ridge which extends out from higher uplands located 300-500 m to the east. The site is bordered on the north by a minor forested drainage, on the west by Lebo creek, and on the south and southeast by an expanse of bottomland. The slopes of the ridge are steep to the north and west, and gentle to the south and southeast.

Present conditions: The site is covered with a sparse growth of grass, scattered weeds and small trees and is forested along its northern and western peripheries. The site is being affected only by the periodic burning off of vegetation by Refuge personnel. The surface of the site is strewn with field chert, presumably a natural deposit judging by its abundance and ubiquitous nature. Assuming that the rock extends below the surface, as appears likely, it is quite possible that the site has never been cultivated.

The site was visited on one occasion during the season. The investigation consisted of pedestrian survey and the collecting of exposed archeological materials from the surface.

Archeological materials

The archeological materials encountered at 14CF382 consisted of prehistoric chipped-stone artifacts, including a projectile point, bifaces, scrapers, a utilized flake, cores, and debitage. All tools and a representative sample of the debitage were collected from the site. Numerous unworked field-chert cobbles and pebbles of various sizes were also found.

The single projectile point is incomplete, with about half the base, a small portion of the tip, and a small portion of one side of the blade having been broken away. It is a medium-sized point, made of finely textured, heat-treated, tan and red chert. It has been carefully retouched along its edges. Morphologically, it is subtriangular in form with a broad blade and a short expanding stem formed by corner notching. The blade, 30 mm wide at the shoulder, has subconvex sides and sharp, prominent, slightly downward pointing barbs. The shape of the stem is not fully evident, but appears to be shallowly expanding with straight sides. The extant tang is angular, though not sharp. Unfortunately, the shape of the base could not be determined. The point is 6 mm thick and 50 mm long; the estimated stem width is 18.5 mm and the estimated basal width is 19.5 mm. Typologically, similarities can be seen with the Norton or Manker Corner-Notched projectile point types (c.f. Montet-White 1968:71), although the exact degree of correspondence could not be determined due to the breakage of the specimen.

Six bifaces were recovered from the site. Two are complete and one nearly so. The remainder are small fragments of larger pieces. The two complete bifaces include one ovately triangular specimen of heat-treated gray, tan, and red chert. It is crudely flaked along all its edges, and is relatively thick, 14 mm, with a length of 50.5 mm and a maximum width of 30 mm. The other complete biface was produced from a small, slab-shaped, tan-colored field-chert cobble. Two adjoining edges, or sides, of the somewhat square-shaped piece are bifacially flaked and slightly retouched, but the majority of the cobble's surface is unmodified and covered by cortex. The cobble is fortuitously shaped, with the two unmodified edges of the tool (opposite from the bifacial edges) being wide and flat, resulting in a tool form essentially quite similar in a morphological and functional sense to backed blades and backed knives as discussed by Bordaz (1970:19, 57).

The one nearly complete biface is a large, alternately beveled piece, one end of which is broken off. The biface is crudely flaked of fossiliferous gray chert and is somewhat ovately shaped, with one straight edge and one convex edge. The biface is 8.5 mm thick, with a maximum width of 48.5 mm and a maximum (incomplete) length of 90 mm.

The other three bifaces are comparatively incomplete, being fragments of larger, broken pieces. The most finished and informative of the three consists of a portion of the base and midsection of a large, possibly triangular-shaped biface. It is 6.5 mm thick and made of heat-treated, tan and red chert. Both of the other two bifaces are made of gray chert. Both appear to be simple test pieces.

One endscraper, made of white chert, was collected at the site. It is somewhat circular, but asymmetrically shaped, with steep unifacial flaking at the bit and bifacial flaking along one lateral edge. The tool is 33 mm long, 29.5 mm wide at the bit, and 8.5 mm thick.

One retouched flake scraper was found. It is made of tan chert, and exhibits steep unifacial flaking at the bit end. The lateral edges of the piece are basically unmodified, except for some slight breakage from hafting. The proximal end of the tool is missing. The artifact measures 23 mm wide at the bit, and is 5 mm thick.

One retouched flake, made of fossiliferous gray chert, was found at the site. It exhibits minor unifacial retouch along portions of three edges. Two of those retouched areas are concave in shape, and heavily utilized, suggesting use as a spokeshave.

Five cores were retrieved from the site. One is a blank decortication specimen, another is the remnant of a grayish brown field-chert cobble and three have limestone cortex. All but the field-chert specimen are fossiliferous bluish gray chert. All five are irregularly shaped.

A total of 144 pieces ofdebitage, including 129 waste flakes and 15 pieces of shatter, were taken from the site. The total includes four primary, 45 secondary, and 80 blank decortication flakes, and two primary, eight secondary, and five blank pieces of shatter. A little under 81 percent of the secondary and primary decortication specimens were derived from the field chert. The remainder exhibit limestone cortex. Approximately 31 percent of thedebitage appears to have been heat treated, but it should be noted that the periodic burning off of the surface vegetation may have resulted in at least some of the heat treatment.

Summary and conclusions

14CF382 is identifiable as representing the remains of a prehistoric camp site attributable, on the basis of lithic evidence, to one of the Early Ceramic or Middle Ceramic cultural complexes. On the basis of the large, corner-notched projectile point, the site could be interpreted as a representative of the Plains Woodland Greenwood phase, but in lieu of more securely diagnostic evidence, particularly ceramics, the site's specific cultural affiliation must be regarded as uncertain. No ceramics, structural remains, or evidence of any other cultural features were encountered, and this absence coupled with the abundance of chipped-stone debris and chert cobbles suggests that the site primarily functioned as a flintknapping station. Granted the likelihood that the unworked chert was deposited by natural agencies, the site can be regarded as a quarry site or chert source area.

The site may have been adversely affected in the past by cultivation, but this is neither certain nor likely. If the abundance of chert extends below the surface, cultivation would have been difficult if not impossible. Buried cultural remains, however, would likewise be very unlikely. The site therefore appears to have very little investigative potential and is unlikely to yield any further archeologically significant information.

Site 14CF383

Site description

Reservoir location: At an elevation of 1050 ft, in the flood control pool, in the Flint Hills National Wildlife Refuge.

Soil type: Dennis silt loam.

Setting: 14CF383 is in the uplands above the left bank of the Neosho river. The site covers an area approximately 200 X 300 m on the western end of a broad, low-lying, L-shaped upland ridge which is part of a broad, low-lying bench extending out from higher uplands located 1600-2400 m to the northeast. The ridge merges with the bench about 300 m to the east of the site. The site is located just north of a large oxbow lake and just east of a smaller oxbow lake. Both are part of a broad flood channel of Lebo creek. A minor tree-lined drainage lies about 300 m to the east of the site, forming the eastern boundary of the ridge. A forested fenceline runs north-south through the extreme western edge of the ridge. The site may extend somewhat to the west, but this could not be determined due to the thick vegetational cover in that area.

Present conditions: The site is in a cultivated field and is being adversely affected by cultivation and occasional flooding. The distinctively colored upland subsoil has been brought to the surface across much of the upper slopes of the ridge.

Investigations

The site was visited twice during the summer. The investigation consisted of pedestrian survey and the collecting of exposed archeological materials from the surface.

Archeological materials

The archeological materials encountered at 14CF383 consisted of prehistoric lithic artifacts, small field-chert cobbles, and a small amount of historic and/or modern debris. The latter, consisting of small metal and glass fragments, was nondiagnostic and very possibly modern, and was therefore not collected. All prehistoric tools, and a representative sample of thedebitage, were collected.

Prehistoric artifacts: The artifact inventory consists of one utilized flake, one hammerstone, and debitage.

The utilized flake is made of fossiliferous gray chert. Morphologically, the tool could be tentatively described as a utilized flake scraper, since it is somewhat triangular in shape with one snubnosed end which exhibits heavy utilization wear, possibly the result of hafting. A longitudinal ridge, or keel, runs down the middle of the dorsal face of the flake. The artifact is 24 mm long, 28.5 mm wide at the bit, and 7 mm thick.

The hammerstone is a small, fist-sized, somewhat loaf-shaped field-chert cobble which bears battering marks along the more prominent of its edges. The "loaf" shape of the artifact is in part culturally derived: several large flakes were removed from the flat face of the cobble.

A total of 15 pieces of debitage, all waste flakes, were collected. The total includes one primary, five secondary, and nine blank decortication specimens. All the primary and secondary specimens were derived from field chert. Approximately 31 percent of the debitage appears to have been heat treated.

Summary and conclusions

14CF383 is identifiable as representing the remains of an historic Euro-American farmstead and/or dump, and the remains of a prehistoric camp site of indeterminate age and cultural affiliation. No structural remains or evidence of any other cultural features were encountered. The historic component is sparsely represented and is probably the result of the chance deposition of artifacts, perhaps occurring quite recently, rather than an actual occupation. It is not historically significant.

Cultivation has brought the upland subsoil to the surface across much of the site, indicating that most if not all of the site's primary archeological potential has been destroyed. Judging as well from the paucity of the prehistoric remains, the site has little or no investigative potential and is unlikely to yield any further archeologically significant information.

Site 14CF384

Site description

Reservoir location: At an elevation of 1050 ft, in the flood control pool, in the Flint Hills National Wildlife Refuge.

Soil type: Woodson silt loam and Kenoma silt loam.

Setting: 14CF384 is in the uplands above the right bank of Benedict creek. The site covers an area approximately 400 X 200 m in size on the crest and slopes of a north-south-trending upland ridge, located along the edge of a broad, low-lying upland bench which extends out from higher uplands 800-1600 m to the north. A narrow strip of bottomland, and Benedict creek, border the site on the east. A minor drainage, converted into a pond by the emplacement of a small manmade dam, lies to the north. The uplands continue for some distance to the west, but drop gently down to the Neosho river bottomland on the south and southeast. Forested fencelines lie to the immediate west and south of the site.

Present conditions: The site is in a cultivated field and has been adversely affected by cultivation. The northern edge of the site has undoubtedly been disturbed to an unknown degree during the construction of the dam for the pond. Surprisingly, cultivation of the site has not brought the distinctively colored upland subsoil to the surface.

Investigations

The site was visited on one occasion during the season. The investigation consisted of pedestrian survey and the collecting of artifacts from the surface.

Archeological materials

The archeological materials encountered at 14CF384 consisted of sparse amounts of historic and prehistoric artifacts, faunal material, and scattered unburned limestone slabs. The prehistoric artifacts were found throughout the site, but the historic artifacts, faunal material, and limestone slabs were confined to the southern portion only. The historic artifactual material consisted of nondiagnostic metal and glass fragments. Historic structural remains are undoubtedly represented by the limestone slabs. All prehistoric artifacts and all faunal remains were collected, along with a small sample of the historic artifacts.

Historic artifacts: One clear, violet-hued, glass bottle fragment, apparently the neck and rim section of a cork-type bottle with a flaring, disc-shaped lip, was collected. No mold marks are present on the artifact.

Prehistoric artifacts: One utilized flake and ten pieces of chipped-stone debitage comprise the prehistoric artifact inventory. The utilized flake, made of heat-treated tan chert, exhibits minor unifacial utilization wear along a portion of one edge. A total of ten pieces of debitage, including four secondary and five blank decortication waste flakes and one secondary piece of shatter, was found at the site. All the secondary decortication specimens are field chert. Half the debitage appears to have been heat treated.

Faunal remains: Three bovid vertebral sections and three associated bone fragments, from an immature animal, were found at the site. All the material is unburned and slightly weathered, but not discolored. It is assumed that all the material is recent in age, an inference supported by its association with the historic artifacts and the limestone slabs.

Summary and conclusions

14CF384 is identifiable as representing the remains of an historic Euro-American farmstead, and the remains of a prehistoric camp site of indeterminate age and cultural affiliation. No prehistoric structural remains or evidence of any other prehistoric cultural features were found. Historic structural remains, however, are assumed to be represented by the limestone slabs in the southern portion of the site. Since no building is described as being in this location in 1878 (Edwards Brothers 1868:51), the structure is assumed to have been built after that date. The component is not historically significant.

The site has been adversely affected by cultivation, and possibly by construction activity in the northern portion of the site. Both the historic and the prehistoric component are sparsely represented, and neither appear at this time to be particularly important. The absence of any upland subsoil on the surface, however, suggests that the prehistoric component may be at least partially buried. Testing will be necessary for a determination of the site's archeological significance.

Site 14CF385

Site description

Reservoir location: At an elevation of 1050 ft, in the flood control pool, in the Flint Hills National Wildlife Refuge.

Soil type: Verdigris silt loam.

Setting: 14CF385 is in the bottomland on the immediate left bank of Benedict creek. The site covers an area approximately 100 X 150 m in size on a broad alluvial knoll, bordered on the west and south by Benedict creek. A very shallow, minor drainage, likely recent in age, forms the northern boundary of the site. A north-south-trending treeline marks the general eastern limits of the site, although the bottomland continues some 400-500 m to the east before merging with the uplands.

Present conditions: The site is in a cultivated field and is receiving adverse impact from cultivation and occasional flooding.

Investigations

The site was visited on two occasions during the season. The investigation consisted of pedestrian survey and the collecting of exposed archeological materials from the surface.

Archeological materials

The archeological materials encountered at 14CF385 consisted of prehistoric lithic artifacts, a few unworked field-chert cobbles, and several chunks of burned limestone. The limestone was concentrated in the northern portion of the site. All lithic tools were collected, along with most of thedebitage.

Prehistoric artifacts: The prehistoric artifact inventory consists of chipped stone and ground stone. The chipped stone includes two bifaces, one retouched flake scraper, four utilized flakes, two small cores, and debitage. The ground stone consists of one sandstone grinding-stone fragment.

Chipped stone: One of the two bifaces found at the site appears to be the midsection of a notched projectile point, but there is so little left of the original artifact that such an identification is somewhat speculative. The biface is made of grayish white chert and has a maximum width of 23.5 mm and a thickness of 6 mm. The exact nature of the notch, or the putative stem, could not be determined. The one extant barb is prominent but not downward pointing.

The other biface, made of gray field chert, is complete and could perhaps be better termed a knife. It has an elongated, ovate shape, measuring 74 mm long and 23 mm wide. It is rather thick, 13.5 mm, for its size. All the edges of the piece are worked except for a small portion on one side of one face, where cortex is present. No retouch is present on the artifact, which displays large percussive flake scars and sinuous edges.

The retouched flake scraper is made of coarsely textured white and brown chert. It exhibits steep unifacial retouch along one broad edge of the flake but is otherwise unmodified.

Of the four utilized flakes, only one has been extensively used. Made of heat-treated, mottled, pink and gray chert, the flake exhibits unifacial utilization wear along one long edge and a prominent, unifacially utilized concavity on the opposite edge. Small portions of the straight part of the latter edge have been unifacially utilized as well. The other three utilized flakes exhibit only very light utilization wear along portions of one of their edges. One is made of heat-treated, pinkish colored chert, another of fossiliferous gray chert, and the other of tan field chert.

Two small cores or core fragments were found. Both are remnants of field-chert cobbles; one has been heat treated.

A total of 47 pieces of debitage, including 45 waste flakes and two pieces of shatter, was taken from the site. The total includes four primary, 20 secondary, and 21 blank decortication waste flakes, and one primary and one blank piece of shatter. All the secondary and primary decortication specimens were derived from field-chert cobbles. Approximately 43 percent of the debitage appears to have been heat treated.

Ground stone: One ground-stone artifact was found. It consists of a piece of fairly dense, reddish tan sandstone which displays one smooth, flat, ground face. Unfortunately, the extant portion of the original artifact is small, about fist-sized, and relatively uninformative, with numerous broken edges. In addition, plow scars have marred the ground face of the tool.

Summary and conclusions

14CF385 is identifiable as representing the remains of a prehistoric camp site of indeterminate age and cultural affiliation. No structural remains were found, but evidence of hearths, in the form of burned limestone, was encountered in the northern portion of the site.

The site has been adversely affected by cultivation and associated soil erosion, but due to the bottomland location of the site and the presence of scattered burned limestone, it is possible that buried remains, specifically one or more hearths, may be present beneath the plow zone. If so, it is possible that archeologically significant information could be recovered; however, testing will be necessary for an accurate determination of the site's scientific significance.

Site 14CF386

Site description

Reservoir location: At an elevation of 1050 ft, in the flood control pool, in the Flint Hills National Wildlife Refuge.

Soil type: Verdigris silt loam.

Setting: 14CF386 is in the bottomland on the immediate left bank of Benedict creek. The site covers an area approximately 100 X 100 m in size but may extend into a brushed-over area to the south which could not be inspected due to the density of the vegetation. The site is on a broad, low-lying alluvial knoll located on the edge of a wide terrace formation. It is bordered by shallow swales on the north and northeast, by a minor tree-lined drainage on the west, and by Benedict creek on the immediate southwest. The uplands lie 400-500 m to the northeast. An east-west-trending forested

fenceline marks the presently known southern extent of the site, but the topographic situation suggests that the site likely extends further south into a brushed-over area, since the terrace on which the site is situated extends 150-200 m south of the fenceline before sloping down to the somewhat lower Neosho river bottomland.

Present conditions: The site, as presently defined, is in a cultivated field and is being adversely affected by cultivation and occasional flooding. The possible site area to the south has been cultivated in the past but is presently covered with brush and weeds.

Investigations

The site was visited twice during the season. The investigation consisted of pedestrian survey and the collecting of exposed archeological materials from the surface.

Archeological materials

The archeological materials encountered at 14CF386 consisted of a few prehistoric chipped-stone artifacts and a few small, scattered, unburned pieces of limestone.

All the artifacts encountered at the site were collected. Unfortunately, they have since become lost or misplaced and were unavailable for analysis at the time of the writing of this report. A check with the field notes and the laboratory accession list, however, revealed that the collection consisted of chipped stone and included the midsection of a drill and six waste flakes. No culturally diagnostic materials were found.

Summary and conclusions

14CF386 is identifiable as representing the remains of a prehistoric camp site of indeterminate age and cultural affiliation. The site is sparsely represented, with no evidence of structural remains. Sparse and rather uncertain evidence of hearths, in the form of a few scattered chunks of limestone, was found at the site.

The site has been adversely affected by cultivation. Due to its bottomland location, however, it is possible that buried remains are present. Testing will be necessary for a determination of the site's scientific significance.

Site 14CF387

Site description

Reservoir location: At an elevation of 1050-1060 ft, in the flood control pool.

Soil type: Dennis silt loam.

Setting: 14CF387 is in the uplands above the right bank of Hickory creek. The site covers an area approximately 150 X 150 m in size on the end of a high, southeasterly pointing, gently sloping upland ridge which extends out from higher uplands located 400-800 m to the northwest. The ridge is just downstream of the confluence of West Hickory creek and East Hickory creek. To the southeast and south, the ridge drops fairly rapidly down to bottomland and the reservoir. To the north and northeast, precipitous slopes lead down to a forested drainage.

Present conditions: The site is in a cultivated field covered by grass and scattered weeds except where eroded. It has been adversely affected in the past by cultivation and rather extensive agricultural terracing. It is presently receiving adverse impact from periodic wave-action erosion, which has stripped away the vegetation and top soil along the eastern and southeastern slopes of the ridge. Archeological materials have been exposed and washed out of situ in the process. In addition, driftwood and modern debris have been deposited by the alluvial activity.

Investigations

The site was visited on one occasion during the season. The investigation consisted of pedestrian survey, the collecting of archeological materials from the surface, the taking of 12 soil probes, and the excavation of two 30 cm² test pits taken to a depth of 40 cm below surface. No cultural evidence was found during the testing, other than the presence of a plow zone approximately 18-20 cm thick.

Archeological materials

The archeological materials encountered at 14CF387 consisted of historic and prehistoric artifacts, and faunal material. All the prehistoric ceramic artifacts and lithic tools and all faunal remains were collected, along with a representative sample of the lithic debitage and the historic artifacts.

Historic artifacts: The historic artifact inventory consists of one metal hatchet head, ceramics, and glass. The head of the hatchet or small axe is complete but very rusty. It is a rounded hour-glass shape, with a blade width of 94 mm. A nail-pulling slot is present on the lower edge of the tool. No manufacturer's marks are observable. The ceramic inventory includes the stem section of a fired-clay

pipe, and three whiteware body sherds. The pipe stem, both ends of which are broken, is white in color and measures 7 mm in diameter. The three whiteware sherds include one with a blue painted decoration of uncertain design, one with a black transfer-print decoration with a floral design, and one plain sherd. One glass fragment, consisting of a portion of the rim and neck of a small, cork-type bottle, was also found. It is clear, and light blue or turquoise in color.

Prehistoric artifacts: The prehistoric artifact inventory consists of two pottery sherds and a variety of chipped-stone artifacts, including projectile points, bifaces, scrapers, retouched and utilized flakes, cores, and debitage.

Ceramics: Two body sherds were found. Both have cord-roughened exterior surfaces and are tempered with indurated clay. Both sherds are somewhat eroded and oxidized. Surface textures are fine. The cores appear to be slightly laminated. Surface colors range from orangish tan to light gray; cores are light gray. Surface treatment consists of cord-roughened exteriors and plain interiors. The cord used in producing the impressions--determinable on only one sherd, the least eroded of the two--had a Z-twist and was medium gauge in size. The impressions are spaced about 3 mm apart. No decoration is present on either of the two sherds, each of which measure 5 mm thick. Vessel morphology could not be determined from the evidence at hand.

Lithics: Three projectile points, five biface fragments, one small chopper-like biface, four utilized flakes, two cores, and debitage were recovered from the site.

Only one of the three projectile points is complete. Made of heat-treated, pinkish colored, fossiliferous chert, it is small, plain, and asymmetrically triangular in shape, with a length of 19 mm, a basal width of 18 mm, and a maximum thickness of 3.5 mm. One lateral edge is slightly concave; the other two are slightly convex. Very little retouch is present on the artifact, which may be little more than a nearly finished preform. Typologically, an affinity with the Fresno projectile point type (c.f. Bell 1960:44) is apparent.

Of the two incomplete projectile points, one consists of the base and a portion of the midsection of an expanding-stemmed, corner-notched projectile point made of heat-treated pink, gray, and white banded chert. One barb remains on the point. It is prominent but not downward pointing, and is slightly contracting in relation to what remains of the rest of the blade. The shape of the blade, or the width, could not be determined. The stem is rather short (11 mm), and rapidly expanding, with a stem width of 19 mm and an estimated basal width (one tang is broken off)

of 25 mm. The base is subconvex in shape. The artifact is 6.5 mm thick. Without the blade, typological affinities for the point are difficult if not impossible to determine. However, the Ellis projectile point type (c.f. Bell 1960:32) would seem to be a likely candidate.

The other of the three projectile points is made of grayish brown chert. It consists of the blade section of a small, thin, elongatedly triangular, notched point. One of the barbs is slightly downward pointing, suggesting the former presence of corner notches or oblique side notches. The blade, from which a small portion of the tip has been broken away, has an estimated length of 18 mm, a shoulder width of 10.5 mm, and a maximum thickness of 3.5 mm. An affinity with the Scallorn projectile point type (c.f. Bell 1960:84) seems probable.

Five biface fragments were found. Two are nearly complete, another is a tip section, another a midsection, and the fifth is the edge of a midsection. One of the two nearly complete bifaces, both of which lack their tips, is a large triangular piece, probably a preform for a corner-notched or stemmed point. Made of brown field chert, from which the cortex has been only partially removed, the biface has an estimated length of 48 mm, a basal width of 24 mm, and a maximum thickness of 8 mm. It is rather crudely chipped and displays no retouch.

The other nearly complete biface may be the remnant of a small perforator. Made of coarsely textured brown chert, it has an elongated shape, somewhat like an expanding-based drill, with a rounded and slightly bulbous base, and a narrow, concave-sided blade. The length of the blade could not be determined since the tip is missing. The fragment is 21 mm long at present, and, at the point of breakage, 5 mm wide and 2 mm thick. The basal width is 11 mm, basal thickness 4 mm.

The other three bifaces are rather uninformative. They are made of different kinds of fossiliferous gray chert. Only the midsection has been heat treated. It is 27 mm wide and 7 mm thick, with straight edges. Another biface, the tip section, is fairly broad, with a maximum width of 22 mm at the point of breakage. It has a rounded tip and is 4.5 mm thick. The last biface, the edge of a midsection, is 6 mm thick. All three bifaces are retouched, and are likely fragments of projectile points or knives.

One other bifacial tool, a large, thick, oblong-shaped biface, has been classified here as a small chopper. Made of tan field chert with cortex covering much of one face, the piece is crudely flaked and has very sinuous edges. It has a length of 52 mm, a width of 38 mm, and thickness of 18 mm.

The four utilized flakes found at the site include three with heavily utilized unifacial concavities, and one with a unifacially utilized edge. One of the former also has one bifacially utilized straight edge. Three of the four are made of heat-treated chert, the other is gray fossiliferous chert.

Two small cores were found. Both are irregularly flaked field-chert cobbles. Neither is heat treated.

Sixty-four pieces of debitage, including 58 waste flakes and six pieces of shatter, were taken from the site. The total includes one primary, ten secondary, and 47 blank decortication flakes, and two primary, two secondary, and two blank pieces of shatter. Field-chert cortex was present on the majority of the primary and secondary decortication specimens. Approximately 34 percent of the debitage appeared to be heat treated.

Faunal remains: Three small bone fragments were found at the site. Two are very thin and may be sections of ribs. The other is a very eroded long-bone fragment from a large animal. None of the four is burned or discolored, and all are presumed to be recent in age.

Summary and conclusions

14CF387 is identifiable as representing the remains of an historic Euro-American farmstead and/or dump, and a prehistoric camp site attributable, on the basis of diagnostic ceramic and lithic evidence, to the Pomona focus of the Middle Ceramic period. No historic or prehistoric structural remains or evidence of any other cultural features were encountered on the surface of the site, and limited testing failed to produce any evidence of subsurface cultural manifestations. The historic component is sparsely represented, and is probably the result of the chance deposition of artifacts rather than an actual historic occupation. It is not historically significant.

The site has been adversely affected by the effects of cultivation, agricultural terracing, and wave action. Judging as well from the negative testing results, the site has no investigative potential and is unlikely to yield any further archeologically significant information. It thus appears to have no scientific significance.

Site 14CF388

Site description

Reservoir location: At an elevation of 1050-1055 ft, in the flood control pool.

Soil type: Eram silt loam.

Setting: 14CF388 is in the uplands above the right bank of West Hickory creek, due west of the confluence of that creek and East Hickory creek. The site is on the end of a high, southeasterly pointing upland ridge which extends out from higher, gently sloping uplands located 600-1200 m to the north-northwest. The ridge drops rapidly down to a minor forested drainage on the southwest, and down to bottomland on the south and east. An east-west-trending tree-lined fenceline marks the presently known northern extent of the site, which probably continues a short distance to the north onto privately owned land. That area could not be examined due to the presence of a thick vegetational cover of brush thickets and grass pastureland. Archeological materials were found south of the fenceline in an area approximately 250 X 100 m in size.

Present conditions: The site is in a fallow field and is covered with a sparse growth of grass and weeds except where eroded. It has been adversely affected in the past by cultivation, and is presently receiving adverse impact from the effects of periodic wave action. The wave action has stripped away the top soil along the upper slopes of the ridge, exposing and washing artifacts out of situ in the process. The alluvial activity has also deposited driftwood and debris along the southern and eastern periphery of the site. Driftwood has on occasion been pushed into piles and burned by project employees, resulting in a minor amount of soil displacement as well as the creation of burned earth.

Investigations

The site was visited on one occasion during the season. The investigation consisted of pedestrian survey, the collecting of exposed archeological materials from the surface, the taking of ten soil probes, and the excavation of two 30 cm² test pits, taken to a depth of 35 cm below surface. The testing failed to produce any cultural evidence. A thin, 10-15 cm deep plow zone was present, with the dark brown top soil being easily differentiated from the light tan subsoil.

Archeological materials

The archeological materials encountered at 14CF388 consisted of prehistoric ceramic and lithic artifacts, including a paucity of the former and an abundance of the latter; scattered, small chunks of sandstone; and burned earth fragments. The burned earth was determined to be recent, the result of the burning off of driftwood, and was left at the site along with the sandstone. All prehistoric ceramic artifacts and lithic tools were collected, as well as a large and representative sample of the lithic debitage.

Prehistoric artifacts: The prehistoric artifact inventory consists of one pottery sherd, several chipped-stone tools and an abundance of debitage, and one piece of unworked hematite.

Ceramic artifacts: One cord-roughened, indurated-clay-tempered neck sherd was found at the site. The eroded and oxidized sherd consists of a small portion of the neck and shoulder of the original vessel. The surface textures of the sherd are fine and the core is laminated and contorted. The surface color is orangish tan; the core is gray. A cord-roughened exterior and a plain interior comprise the surface treatment. The cord impressions are medium gauge, and spaced about 2 mm apart, but the cord twist could not be determined. No decoration is observable on the sherd. Morphologically, the specimen indicates only that the original vessel had a well-defined neck. The sherd measures 8 mm thick, thinning to 7.5 mm at the neck.

Lithic artifacts: Two projectile points, five bifaces, two end-scraper fragments, two retouched flake scrapers, one retouched flake, six utilized flakes, three cores, and debitage comprise the lithic artifact inventory from 14CF388.

One projectile point is a small, thin, triangular, side-notched and basally notched specimen made of heat-treated pink and tan chert. The finely retouched point is 20 mm long, 13 mm wide at the base, and 2.5 mm thick. The prominent and slightly descending notches are located high on the body of the artifact, about 8 mm above the base. The base is slightly concave, but the sides are straight. Typologically, the point is identifiable as representing the Harrell projectile point type (c.f. Bell 1958:30).

The other projectile point is also small, thin, and triangular, but has very small, almost incipient, double side notches located high on the body of the point, at approximately mid-height. The sides and the base of the artifact are slightly concave. The piece is made of heat-treated, pink banded chert. It is retouched only along its edges, and is 16 mm long, 13 mm wide at the base, and 2 mm thick. Typologically, the point may be regarded as an example of the Huffaker projectile point type (c.f. Bell 1960:44).

The biface inventory includes three thin, carefully retouched bifaces and two larger, crudely flaked bifaces. Of the three thin bifaces, two are small tip sections of broken projectile points or knives. The smallest, made of fossiliferous gray chert, is triangular in shape with straight sides. It is 12 mm long at present, 9.5 mm wide at the point of breakage, and 2 mm thick. The larger tip section, made of heat-treated pink chert, has subconvex sides and a rounded tip. It is 20 mm long at present, 19.5 mm wide at the point of breakage, and 5 mm thick. The other thin biface, made of fossiliferous bluish gray chert, is little more than a

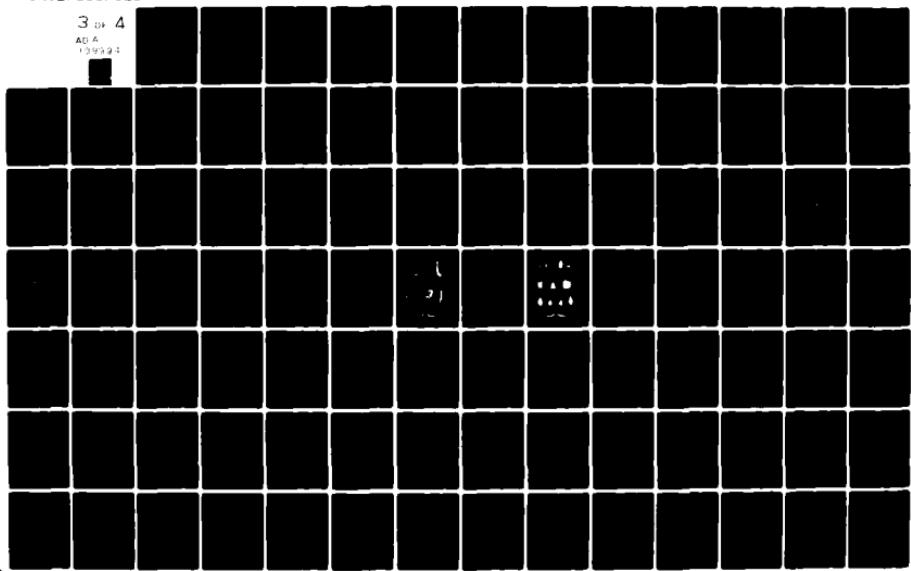
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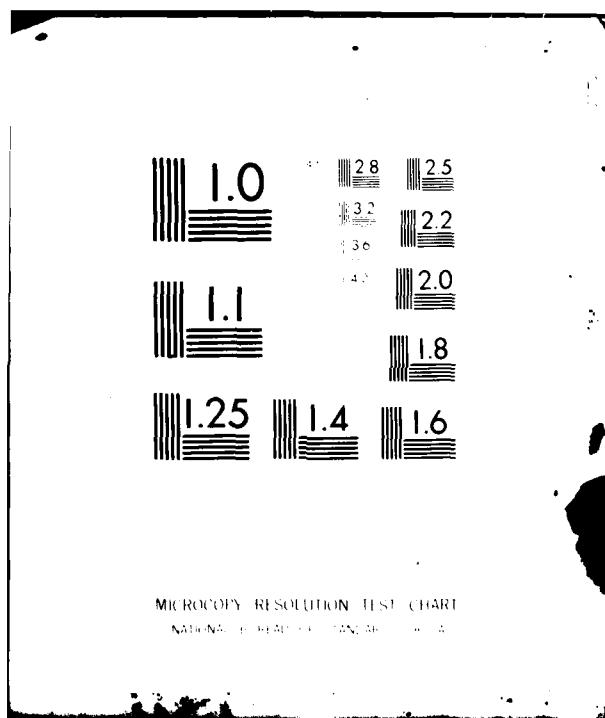
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small, thin, subtriangular flake which has been lightly retouched along the edges of the two longest sides. The tip and part of the base of the projectile-point-like artifact are missing. The biface may represent a broken and discarded projectile point preform.

The two larger and more crudely flaked bifaces are roughly triangular in form. Neither has been worked along all edges. One, made of heat-treated, pink and gray chert, appears to be nothing more than a simple test piece. The other appears to be a cutting tool. Made of tan field chert, the biface exhibits cortex on most of one face and on one unfinished, 12 mm thick, subconcave edge. The edge opposite the unfinished edge is the longest edge of the piece. It is subconvex in shape with a decidedly sinuous, bifacially worked edge. Functionally, the tool may have been used in the manner of a backed knife or backed blade (c.f. Bordaz 1970:19,57).

The two endscraper fragments are both bit sections. One is made of fossiliferous gray chert and the other of heat-treated pinkish gray chert. The former is 31 mm wide and 14 mm thick, the latter is 24 mm wide and 10 mm thick. Neither is keeled.

Two retouched flake scrapers were found, both made of fossiliferous gray chert. One, made from a fan-shaped flake, is keeled and has an unfinished proximal end. The wide bit end is unifacially flaked along its edges, but the lateral edges of the scraper are only minimally modified. The artifact is 32 mm long, 32.5 mm wide at the bit, and has a maximum (midsection) thickness of 12 mm with a bit thickness of 4 mm.

The other retouched flake scraper is even less modified. Made from a thin, amorphously triangular flake, it has a snubnosed bit which has been steeply unifacially retouched. The lateral edges are broken, and exhibit utilization wear. The artifact is 27 mm long, 21 mm wide and 5.5 mm thick at the bit, and 3 mm thick at the midsection.

One retouched flake was retrieved from the site. Made of fossiliferous gray chert, the flake is 14 mm wide and more or less rectangular in shape, with one unfinished end and one somewhat wider broken end. A longitudinally oriented ridge runs down the center of the dorsal face of the flake, which is 6 mm thick. Steep unifacial retouch is present along the lateral edges of the piece. It is assumed that the artifact is the proximal end of a broken keeled endscraper.

Six utilized flakes were recovered. Five of the six are heat-treated cherts of various kinds and the other is a piece of tan field chert. All of the former exhibit minor unifacial

utilization wear along portions of their edges, but the field chert specimen appears to have been used as a drill. It is a thin, narrow flake, with a maximum width of 10 mm and a maximum thickness of 5.5 mm, and has a triangular transverse cross-section. Field chert covers most of one of the three faces. The edges of the piece have been heavily utilized, both unifacially and bifacially.

Three cores were discovered at 14CF388. All three are remnants of field-chert cobbles. Two are rather small, little more than core nuclei. One is larger, approximately fist sized. All are irregularly shaped and exhibit large percussive flake scars over most of their surfaces.

A total of 361 pieces ofdebitage, including 337 waste flakes and 24 pieces ofdebitage, was taken from the site. The total includes four primary, 33 secondary, and 300 blank decortication flakes, and six secondary and 18 blank pieces ofshatter. Almost all ofthe primary and secondary pieces ofdebitage was taken from field-chert cobbles. The majority ofthe blank flakes was fossiliferous gray chert. Approximately 17 percent ofthe debitage was heat treated.

One small slab ofrelatively dense hematite was also found at the site. Amorphously triangular in shape, the piece does not appear to have been worked. Although unmodified, it may have been brought to the site by the prehistoric inhabitants to be made into a tool or ornament or to be used for the production ofpigment.

Summary and conclusions

14CF388 is identifiable as representing the remains of a prehistoric camp site attributable, on the basis of diagnostic ceramic and lithic artifacts, to the Pomona focus of the Middle Ceramic time period. No structural remains or evidence of any other cultural features were encountered at the site, and limited testing failed to produce any evidence of subsurface cultural manifestations.

The site has been adversely affected by the effects of wave-action erosion, cultivation, and the burning of driftwood. Judging as well from the negative testing results, the site has little or no investigative potential and is unlikely to yield any further archeologically significant information. It thus appears to have no scientific significance.

Site 14CF389

Site description

Reservoir location: At an elevation of 1045-1055 ft, in the flood control pool.

Soil type: Dennis silt loam.

Setting: 14CF389 is in the uplands above the right bank of Hickory creek. The site is on the end of a southeasterly pointing upland ridge which is part of a relatively narrow bench that extends out from higher uplands located 600-800 m to the northwest and west. To the northeast and south, the ridge drops down to bottomland, and on the east, down to the reservoir. A north-south-trending forested fenceline is located along the end of the ridge. Archeological materials were found on the crest and upper slopes of the ridge, primarily along the fenceline. The site may extend further west and cover more of the ridge, but the vegetational cover was so thick in that area that the ground surface could not be adequately inspected.

Present conditions: The site is in a formerly cultivated field and is receiving adverse impact from wave action which has stripped away much of the top soil along the end of the ridge, particularly just east of the fenceline. Trees along the fenceline have served to partially arrest the erosion. The alluvial activity has also resulted in the deposition of a large amount of driftwood, the presence of which posed a sometimes impenetrable obstacle to the investigation.

Investigations

The site was visited once during the summer. The investigation consisted of pedestrian survey and the collecting of exposed archeological materials from the surface.

Archeological materials

The archeological materials encountered at 14CF389 consisted of historic and prehistoric artifacts and a few scattered small field-chert cobbles. All prehistoric lithic tools were collected, along with a representative sample of the lithic debitage and the historic artifacts.

Historic artifacts: One undecorated whiteware rim sherd, with a smoothly indented lip, was collected.

Prehistoric artifacts: The prehistoric artifact inventory consists of chipped stone and includes one projectile point fragment, two bifaces, two utilized flakes, and debitage.

The projectile point fragment consists of the stem section of an expanding-stemmed, notched point. None of the blade is present on the finely retouched specimen, which is made of heat-treated, fossiliferous, pink and gray chert. The fragment has a stem width of 15.5 mm, a basal width of 21 mm, and a maximum thickness of 6 mm. Assuming the complete stem is present, the

point had a stem length of 9 mm. No definite typological affinities could be inferred due to the incomplete nature of the artifact.

The two bifaces found at the site are both crudely flaked fragments of larger pieces. Both are made of gray fossiliferous chert. One is amorphously shaped and probably no more than a test piece; the other is probably the midsection of a projectile point or knife. The latter fragment is 20 mm wide and 8 mm thick.

Summary and conclusions

14CF389 is identifiable as representing the remains of an historic Euro-American farmstead and/or dump, and the remains of a prehistoric camp site attributable, on the basis of limited and only relatively diagnostic lithic evidence, to one of the Early Ceramic or Middle Ceramic cultural complexes. No historic or prehistoric structural remains or evidence of any other cultural features were encountered. The historic component is sparsely represented, and is probably the result of the chance deposition of artifacts rather than an actual occupation. It is not historically significant.

The site has been adversely affected by past cultivation and by the continuing effects of wave action. Judging from the degree of impact, the site appears to have little or no investigative potential and is unlikely to yield any further archeologically significant information.

Site 14CF390

Site description

Reservoir location: At an elevation of 1036-1045 ft, in the flood control pool.

Soil type: Woodson silt loam, covered by recent silt.

Setting: 14CF390 is in the uplands above the former left bank of the Neosho river and the former left bank of Hickory creek, due east of the former confluence of the two stream courses. The site covers an area approximately 100 X 100 m in size but may extend into the conservation pool. The site is on the end of a broad, ill-defined, shallowly sloping upland ridge which is part of a broad bench extending out from higher uplands located 500-800 m to the northeast. The ridge is now a point of land extending out into the reservoir. The conservation pool forms the southwestern and western boundaries of the site. Few surficial features are observable in the surrounding area.

Present conditions: The site is in a fallow field and is covered by a sparse growth of weeds and brush except where eroded. The site is receiving adverse impact from the effects of water saturation, wave-action erosion, and recreational use, and has been affected in the past by cultivation. Wave action has stripped away the top soil along the edge of the conservation pool, leaving a wide clay beach and exposing and washing artifacts out of situ. The alluvial activity has also resulted in the deposition of driftwood, silt, and modern debris across the site area. Other adverse impact is due to the use of the area as an unauthorized recreational area, involving vehicular traffic, the deposition of modern debris, and the building of campfires and hearths.

Investigations

The site was visited on one occasion during the season. The investigation consisted of pedestrian survey and the collecting of exposed archeological materials from the surface.

Historical research revealed that a building was present a short distance to the northwest of the site in 1878 (Edwards Brothers 1878:43). The land, and presumably the building, was owned by an H. Fry.

Archeological materials

The archeological materials encountered at 14CF390 consisted of a very small number of prehistoric artifacts and a large amount of historic material, including historic structural remains in the form of bricks and a rectangular cement foundation which is rapidly being eroded away by wave action. All prehistoric remains were collected, along with a representative sample of the historic artifacts.

Historic artifacts: Ceramic, metal, and glass artifacts were encountered at the site. The artifact inventory consists of two stoneware rim sherds, one with Albany glaze, and one with an Albany-glazed interior and a salt-glazed exterior; one plain, unmarked, sand brick; one rusted bar of metal, 51 mm long and 32 mm in diameter; and one clear, light blue glass fragment, the basal portion of a rectangular-bottomed glass container.

Prehistoric artifacts: One thin biface fragment and one secondary decortication, heat-treated, field-chert waste flake were found at the site. The biface fragment appears to be the basal section of a small, plain, triangular projectile point. Made of gray chert, the artifact is thin and lenticular in cross-section, and is retouched along its unbroken edges. Although it is badly broken, it was possible to ascertain the basal width

(18 mm), and the thickness (6 mm), and to estimate the former length (41-42 mm). Typologically, the specimen appears to be a broken example of the Fresno or Madison projectile point type (c.f. Bell 1960:44, and Perino 1968:52, respectively).

Summary and conclusions

14CF390 is identifiable as representing the remains of an historic Euro-American farmstead, possibly derived from the H. Fry farming operation of the 1870s, and the remains of a prehistoric camp site attributable, on the basis of relatively diagnostic but very limited lithic evidence, to one of the Middle or Late Ceramic cultural complexes. historic structural remains of uncertain age are present at the site, but they do not appear to be historically significant. No prehistoric structural remains or evidence of any other cultural features were encountered.

The site has been adversely affected by cultivation, water saturation, wave-action erosion, and recreational use, and it is assumed that all primary archeological context has been destroyed by these factors. The site appears to have little or no investigative potential and is unlikely to yield any further archeologically significant information.

Site 14CF391

Site description

Reservoir location: At an elevation of 1040 ft, in the flood control pool, in the Flint Hills National Wildlife Refuge.

Soil type: Verdigris silt loam.

Setting: 14CF391 is in the bottomland on the immediate right bank of Lebo creek. The site covers an area approximately 200 X 200 m in size on a very slight rise in an otherwise flat and featureless field. Lebo creek flows by the eastern edge of the site.

Present conditions: The site is in a cultivated field and is receiving adverse impact from the effects of cultivation and occasional flooding.

Investigations

The site was visited on one occasion during the summer. The investigation consisted of pedestrian survey and the collecting of exposed archeological materials from the surface.

Historical research revealed that a building stood on or very closely adjacent to the site in 1878 (Edwards Brothers 1878:43). The land, and presumably the bulding, was owned by a J. Hoover.

Archeological materials

The archeological materials encountered at 14CF391 consisted of a large number of historic artifacts, including ceramic, glass, and metal fragments, and historic structural remains in the form of numerous slabs of burned and unburned limestone. Only a small, representative sample of the more informative artifacts were collected.

One porcelain button, one porcelain body sherd, and several whiteware and stoneware sherds comprise the ceramic inventory. The porcelain button is small, pink, and four holed. The porcelain body sherd is undecorated and basically uninformative.

The whiteware consists of 11 rim sherds, four basal sherds, and eight body sherds. Three of the rim sherds are decorated by cobalt blue edging along their lips. The basal sherds include two cup fragments and two plate fragments. One of the latter has a portion of a stamped imprint remaining on its bottom, or base, from which the letters "AS. EDW," and, slightly below those, "DAL," can be made out. Of the eight whiteware body sherds, two exhibit blue, red, and yellow transfer-print decoration of uncertain design.

The stoneware consists of one rim sherd with yellowish gold glaze, two rim sherds and one body sherd with salt-glazed exteriors and Albany-glazed interiors, and one rim sherd and one body sherd with an Albany glaze.

The glass artifacts recovered from the site can be divided into two groups, based on color: light bluish green, and light purple or pink. All the glass is clear. The bluish green group includes one neck/rim fragment of a cork-type bottle, two basal fragments, which are deeply grooved along their edges and may represent the remains of an electrical insulator, and three body fragments. The purple or pink group consists of a neck fragment, a basal fragment, and two body fragments. The exterior surface of one of the latter exhibits a portion of a molded inscription from which the letters "OBT" and "ONS" are discernible.

The metal inventory consists of eight very rusty specimens, four square nails and four unidentifiable fragments.

One piece of possible chert shatter was also collected, but its identification as such is quite tentative. Judging from the absence of any other prehistoric evidence, the specimen can be safely regarded as natural rather than culturally derived, or, barring that, as intrusive.

Summary and conclusions

14CF391 is identifiable as representing the remains of an historic Euro-American farmstead, possibly derived from the J. Hoover farming operation of the 1870s. The stone slabs at the site almost certainly represent the remains of the historically documented building. Judging from the low-lying topographic situation and the attendant danger of seasonal flooding, the building was probably a barn or some other kind of outbuilding rather than a residence.

The site has been adversely affected by cultivation and flooding. It is possible that structural remains are present below the plow zone, but the site is not historically significant and is unlikely to yield any archeologically significant information.

Site 14CF392

Site description

Reservoir location: At an elevation of 1055 ft, in the flood control pool, in the Flint Hills National Wildlife Refuge.

Soil type: Verdigris silt loam.

Setting: 14CF392 is in the bottomland on the left bank of the Neosho river. The site covers an area approximately 100 X 200 m in size on a low, relatively narrow alluvial terrace which surrounds the outside edge of a large, prominent, U-shaped meander scar, an intermittent oxbow lake. The "closed" end of the meander scar is oriented towards the northeast; the site is located on the extreme northwest corner of the scar, just west of its most northern point. A north-south-trending treeline marks the presently known western extent of the site. A hiatus of cultural material, but no visible surface features, separate this site from 14CF17, which lies to the east around the bend of the meander scar.

Present conditions: The site is in a cultivated field and is being adversely affected by cultivation and occasional flooding.

Investigations

The site was visited twice during the summer. The investigation consisted of pedestrian survey and the collecting of artifacts from the surface.

Archeological materials

The archeological materials encountered at 14CF392 consisted of prehistoric ceramic and lithic artifacts, and one piece of burned earth. All materials encountered at the site were collected.

Ceramics: One cord-roughened, indurated-clay-tempered body sherd was found at the site, along with one piece of burned earth. The surface texture of the sherd is fine; its core is laminated. The surface color of the piece is orangish tan and gray, with a gray core. The surface treatment consists of a cord-roughened exterior and a plain interior. Due to erosion of the surface of the sherd, nothing could be determined concerning the nature of the cord impressions. No decoration is present on the sherd. Morphologically, the sherd is 6.5 mm thick, but otherwise uninformative.

One small piece of burned earth was also found at the site. The orange and brown piece has a medium-fine, somewhat sandy surface texture and does not appear to be tempered. No grass or twig impressions were observable.

Lithic artifacts: The lithic artifact inventory consists of chipped stone, and includes one biface fragment, one retouched flake, two utilized flakes, two cores, and debitage. The biface fragment, although rather small, appears to be a portion of the midsection of a beveled knife. Made from heat-treated, mottled, pink chert, the artifact is rather crudely flaked with no evidence of retouch. It is 5.5 mm thick.

The retouched flake is made of fossiliferous gray chert, and exhibits one straight, unifacially retouched edge. The artifact is otherwise unworked. The two utilized flakes include one thin, gray chert flake and one larger, and thicker, fossiliferous gray chert flake. Both exhibit small, unifacially utilized concavities; the latter flake also has one utilized straight edge. The two cores are both remnants of field-chert cobbles. Neither are heat treated. Both are irregularly shaped.

A total of 15 pieces of debitage, including 12 waste flakes and three pieces of shatter, were found at the site. The total includes two secondary and ten blank decortication flakes, and three secondary pieces of shatter. The secondary decortication specimens are all from field-chert cobbles, except for one piece of shatter made of grayish brown chert with orangish limestone cortex. Approximately 33 percent of the debitage, or five flakes, appears to have been heat treated.

Summary and conclusions

14CF392 is identifiable as representing the remains of a prehistoric camp site attributable, on the basis of relatively diagnostic but admittedly limited ceramic and lithic evidence, to the Pomona focus of the Middle Ceramic period. No structural remains or evidence of any other cultural features were encountered at the site.

The site has been adversely affected by cultivation, but due to its bottomland location, buried remains may be present. Testing will be necessary for a determination of the site's scientific significance.

Site 14CF393

Site description

Reservoir location: At an elevation of 1050 ft, in the flood control pool, in the Flint Hills National Wildlife Refuge.

Soil type: Verdigris silt loam.

Setting: 14CF393 is in the bottomland on the left bank of the Neosho river. The site covers an area approximately 300 X 100 m in size on a broad, low-lying alluvial terrace located on the central and eastern portions of the interior of a large, prominent, U-shaped, northeasterly pointing meander scar, an intermittent oxbow lake. The semicircular shaped site is bordered on the east and southeast by the meander scar, and on the north and northeast by a shallow, northwest-southeast-trending drainage which drains into the eastern arm of the meander scar. The site curves around a small, shallow, circular swale or depression which lies to the southwest. An east-west-trending dirt road is located a short distance to the south of the site.

Present conditions: The site is in a cultivated field and has been adversely affected by cultivation and occasional flooding.

Investigations

The site was visited twice during the season. The investigation consisted of pedestrian survey, the collecting of exposed archeological materials from the surface, the taking of 40 soil probes, and the excavation of 12 test pits. The pits were taken to a depth of 35-40 cm below the surface, but were narrow, ca. 30 X 40 cm in size, so as to avoid damage to the corn crop. The pits were located primarily in the northern and eastern portions of the site. No cultural evidence was encountered in the test excavations.

Archeological materials

The archeological materials encountered at 14CF393 consisted of prehistoric ceramic and lithic artifacts, burned earth and/or daub, faunal material, and scattered chunks of burned limestone. The limestone was located primarily in the northern and north-eastern portions of the site. All ceramic artifacts and lithic tools were collected, along with a representative sample of the lithic debitage and the larger of the burned earth fragments and faunal remains.

Ceramic artifacts: One rim sherd and six body sherds, two of the latter being exterior spalls, were found at the site along with 13 pieces of burned earth and/or daub. All the sherds are tempered with indurated clay. Two of the body sherds display numerous small holes or pits suggestive of leached-out limestone or shell tempering, although accidental inclusions of fiber, such as grass, might be responsible. A close inspection of the sherds, including the use of muriatic acid, failed to produce any positive evidence of limestone or shell tempering. Surface textures of the sherds are fine and the cores are laminated to contorted. Surface colors on the body sherds are orangish tan to gray, with tan and gray cores. The rim sherd, by way of contrast, displays a dark brown core and surface color. Surface treatment is variable. Plain interiors are present in all observable cases and all the sherds have been cord roughened to some degree on their exteriors, but the cord roughening on the body sherds has been partially smoothed. The nature of the cord impressions was not clearly evident on any of the body sherds. The rim sherd exhibits tightly spaced, irregular cord impressions of uncertain size and twist. No decoration is present on any of the sherds. Morphologically, the body sherds are uninformative, but the rim sherd has an insloping rim, a poorly defined neck, and sloping shoulders. The lip is rounded and 7 mm thick, with the rim thickening to 8 mm. The measurable body sherds were 7, 8, 8.5, and 11 mm thick, respectively.

In addition to the pottery, 13 pieces of burned earth and/or fired-clay daub were collected. All are rather small, about 10-15 mm in diameter, and irregularly shaped. All are somewhat eroded, but faint grass impressions are observable on about half of the group, suggesting that the fragments are indeed daub (i.e., structural remains) and not simply burned earth. The fragments are predominately orangish tan in color and do not appear to be tempered.

Lithic artifacts: Both chipped-stone and ground-stone artifacts were found. The chipped stone includes two crude bifaces, one retouched flake, three utilized flakes, four cores, and debitage. The ground stone consists of one small, partially worked hematite fragment.

Chipped stone: The two crude bifaces found at the site include one of fossiliferous gray chert and one of light brown chert. The former appears to be little more than a test piece. The latter is broken on one end, but has a rounded point on the other. It is thick, 19 mm, for its width of 33 mm, and has sinuous edges with no evidence of retouch.

The single retouched flake is made from a thin flake of coarsely textured, light gray chert. The artifact has one straight, unifacially retouched edge. The three utilized flakes found at the site include one of fossiliferous gray chert, one of bluish gray chert, and one of light gray chert. Each of the two latter exhibit minor unifacial utilization wear on portions of one of their edges. The former was utilized on three of its four edges, and displays a unifacially utilized concavity on one of the three.

One chopper was found at the site. It consists of a fist-sized, heat-treated, field-chert cobble, roughly oblong in shape. It exhibits large, percussive, bifacially placed flake scars on the wider of its two ends.

A total of 28 pieces ofdebitage, including 16 waste flakes and 12 pieces of shatter, was taken from the site. The total includes two primary, six secondary, and eight blank decortication flakes, and seven secondary and five blank pieces of shatter. All secondary and primary decortication specimens were from field-chert cobbles. Approximately 25 percent of thedebitage appears to have been heat treated.

Ground stone: One small, fingernail-sized piece of worked hematite was found at the site. Grinding striations are present on only one face, and one end, of the slab-shaped fragment. The artifact has been ground flat, but is not polished.

Faunal remains: Two small bone fragments were collected at the site. One is burned, the other is not. Both are uninformative regarding the animal or animals represented by the fragments.

Summary and conclusions

14CF393 is identifiable as representing the remains of a prehistoric habitation site attributable to one of the Early Ceramic or Middle Ceramic cultural complexes. The only diagnostic artifacts, the ceramics, display characteristics of both the Early Ceramic Greenwood phase and the Middle Ceramic Pomona focus. Structural remains were present in the form of grass-impressed, fired-clay daub, with hearths and possibly trash pits being represented by burned limestone and burned bone fragments. Limited testing, however, failed to produce any evidence of subsurface cultural manifestations.

The site has been adversely affected by cultivation which, judging from the negative testing results, has succeeded in destroying the site's primary archeological context. The site thus appears to have little or no investigative potential and is unlikely to yield any further archeologically significant information.

Site 14CF394

Site description

Reservoir location: At an elevation of 1050 ft, in the flood control pool, in the Flint Hills National Wildlife Refuge.

Soil type: Osage silty clay loam.

Setting: 14CF394 is in the bottomland on the left bank of the Neosho river. The site covers an area approximately 200 X 75 m in size on a low, relatively narrow alluvial terrace which borders and forms the northwestern edge of a prominent, linear meander scar, an intermittent oxbow lake. The meander scar is about 200 m long and 50 m wide and is oriented in a southwest to northeast direction. An east-west-trending dirt road runs through the southern portion of the meander scar and the extreme southwestern end of the site. Another site, 14CF395, lies on the southeastern edge of the meander scar and may represent an associated, if not identical, occupation as that represented at 14CF394. The meander scar is located approximately 300-400 m north and west of the present-day Neosho river channel, which loops around the general area.

Present conditions: The site is in a cultivated field and has been adversely affected by cultivation and occasional flooding.

Investigations

The site was visited once during the summer. The investigation consisted of pedestrian survey, the collecting of exposed archeological materials from the surface, and the taking of 40 soil probes. The testing failed to produce any evidence of subsurface cultural manifestations.

Archeological materials

The archeological materials encountered at 14CF394 consisted of prehistoric ceramic and chipped-stone artifacts, numerous unworked or barely modified field-chert cobbles, a few pieces of daub or burned earth, and a few scattered chunks of burned limestone. All ceramics and lithic tools were collected, along with the larger pieces of daub and a large sample of the lithicdebitage.

Ceramic artifacts: One rim sherd and 11 body sherds were recovered from the site, along with 15 pieces of daub or burned earth. All of the pottery sherds are relatively eroded, and some are oxidized. Two groups, both tempered at least partially with indurated clay, are discernible. Group 1 consists of the rim sherd and five of the body sherds. They exhibit prominent, deep-relief, vertically oriented cord roughening on their exterior surfaces, and distinct, horizontally oriented scraping or wiping marks on their interiors. Group 2 consists of six body sherds which display plain interiors, along with "cell" tempering, i.e., small, chunky holes or pits suggestive of leached-out limestone. An examination of all the sherds, however, including tests with muriatic acid, failed to produce any positive evidence of such tempering.

Surface textures of the sherds are fine; the cores range from laminated in Group 1 to compact in Group 2. Surface colors range from orangish tan to tan. Core colors in Group 1 are gray but in Group 2 are tan and gray. The cord roughening on the exterior surfaces of the Group 1 sherds consists of medium-gauge cord impressions, spaced from 2-3 mm apart and produced by the use of Z-twist cord. No decoration is present on any of the sherds, although the more-or-less rounded lip of the rim sherd has been rather amorphously and sloppily thickened and may be a form of decoration. Morphologically, the sherds are relatively uninformative. No neck is present on the rim sherd, which extends straight downward from the lip some 32 mm. The Group 1 sherds all measure around 8 mm thick, and the lip 7.5 mm. The Group 2 sherds range in thickness from 6.5 mm to 10.5 mm, with an average of 7.75 mm.

Typologically, the situation is somewhat confused. The Group 2 sherds may represent Verdigris ware of the Early Ceramic Greenwood phase, but the absence of any positive evidence of limestone tempering makes this inference suspect. Given this possibility, however, one is tempted to recognize the Group 1 sherds as representing the "transitional" Greenwood pottery type often found in association with Verdigris ware at Greenwood phase sites. However, the characteristics of the Group 1 sherds are equally indicative of Pomona ware.

In addition to the pottery, 15 pieces of fired-clay daub or burned earth were found. They range in size from very small to thumb sized. One piece bears an apparent pole impression about 15 mm in diameter, but no grass impressions are present on any of the pieces. All are tan colored, finely textured, irregularly shaped, predominately rough surfaced, and somewhat eroded. None appear to be tempered. In general, this material appears to be burned earth rather than daub.

Lithic artifacts: The lithic artifact inventory from 14CF394 includes one projectile point, one thin biface, one retouched flake, three utilized flakes, 27 cores and core remnants, and a large amount ofdebitage.

The projectile point, which lacks both its tip and a large portion of its midsection, has a contracting stem with an asymmetrical, subconvex base. Made of somewhat coarsely textured tan chert, the artifact is crudely flaked with no evidence of retouch. The blade has one sharp, prominent barb, or shoulder, and one ill-defined, rounded barb. The shoulder width is 24 mm, the stem width 15 mm, and the basal width around 10.5 mm. The stem length is around 16.5 mm. The point has a maximum thickness of 8 mm. Typologically, the artifact appears to be a rather crude example of the Gary projectile point type (c.f. Bell 1958:38).

The one thin biface found at the site is a small and very crudely flaked piece made of fossiliferous gray chert. The flake has been rounded, but otherwise exhibits no shaping and appears to be only a test piece.

The retouched flake recovered from the site is a small, thin, rectangular flake of heat-treated, pink and white banded chert. It displays careful retouch along one of its long edges, but is otherwise unmodified. Three utilized flakes were found, one of fossiliferous gray chert, one of tan field chert, and one of heat-treated, tan field chert. The latter exhibits one unifacially modified concavity; the other two flakes have been unifacially utilized along portions of one of their straighter edges.

Twenty-seven cores and core remnants, of various sizes but all less than fist sized, were collected from the site. Two are blank. The remainder, with one exception, are field-chert cobbles. Some are little more than large pieces of shatter. The one non-field-chert specimen is made of fossiliferous gray chert with white limestone cortex. Only four of the cores, ca. 15 percent, appear to have been heat treated.

A total of 462 pieces ofdebitage, including 337 waste flakes and 125 pieces ofdebitage, was retrieved from the site. The total includes 27 primary, 144 secondary, and 166 blank decortication flakes, and 18 primary, 66 secondary, and 41 blank pieces ofshatter. The majority of the primary and secondary specimens were derived from field-chert cobbles, and the remainder primarily from fossiliferous gray chert with white limestone cortex. Many of the flakes were rather chunky and could have just as easily been classified as shatter. Likewise, many of the shatter were large, and slightly flaked, and could perhaps have been categorized as small cores or core remnants. Approximately 19 percent of thedebitage appears to have been heat treated.

Summary and conclusions

14CF394 is identifiable as representing the remains of a prehistoric camp site attributable to one of the Early Ceramic or Middle Ceramic cultural complexes, quite possibly the Greenwood phase of the Early Ceramic. A Greenwood phase occupation is strongly suggested by the combination of cell-tempered (possibly limestone-tempered) pottery, other pottery with the characteristics of the transitional Greenwood pottery type, and a single Gary-like contracting-stemmed projectile point. The evidence is somewhat equivocal, however, given the lack of positive evidence of limestone tempering, the fact that the Greenwood-like pottery could represent Pomona ware, and the fact that contracting-stemmed points are fairly common in Pomona lithic assemblages. A Pomona occupation may be represented by the material, or two components may be present.

The site contained evidence of hearths in the form of small chunks of burned limestone and burned earth fragments. Limited testing, however, produced no evidence of subsurface cultural manifestations. The site has been adversely affected by cultivation which, judging from the negative testing results, has destroyed most if not all of the site's primary archeological context. The site thus appears to have little or no investigative potential and is unlikely to yield any further archeologically significant information, although further surface collecting could result in a more accurate determination of the cultural affiliation of the site's former occupants.

Site 14CF395

Site description

Reservoir location: At an elevation of 1050 ft, in the flood control pool, in the Flint Hills National Wildlife Refuge

Soil type: Osage silty clay.

Setting: 14CF395 is in the bottomland on the left bank of the Neosho river. The site covers an area approximately 150 X 100 m in size on a broad, low-lying alluvial terrace which borders and forms the southeastern edge of a prominent, linear meander scar, an intermittent oxbow lake. The meander scar is about 200 m long and 50 m wide, and oriented in a southwest to northeast direction. An east-west-trending dirt road runs through the southern portion of the meander scar, probably cutting through the extreme northeastern edge of the site. Another better represented site, 14CF394, is on the northwestern edge of the scar and may represent an associated if not identical occupation as that represented at 14CF395. Both sites are approximately 300-400 m north and west of the present-day channel of the Neosho river, which loops around the general site area.

Present conditions: The site is in a cultivated field and has been adversely affected by cultivation and occasional flooding.

Investigations

The site was visited twice during the season. At that time, the northern half of the site was under a dense cover of mature winter wheat, thus limiting the investigation to the southern half. The investigation consisted of pedestrian survey, the collecting of exposed archeological materials, the taking of 20 soil probes, and the excavation of two 60 cm² test pits, dug to a depth of 40 cm below the surface. The testing failed to produce any evidence of subsurface cultural manifestations.

Archeological materials

The archeological materials encountered at 14CF395 consisted of sparse amounts of prehistoric ceramic and lithic artifacts, burned earth, faunal remains, and burned limestone. All except the limestone was collected, but it should be reemphasized that artifact collection was not undertaken in the northern half of the site due to the thick vegetational cover.

Ceramics: Two undecorated body sherds, both tempered with indurated clay, were found at the site, along with four pieces of burned earth or daub. Surface textures of the sherds are fine. The cores are compact. Surface colors are tan and grayish brown; cores are grayish brown. The surface treatment consists of cord-roughened exteriors and plain, partially scraped or wiped interiors. The deep relief, variably spaced cord roughening was produced by the use of medium-gauge Z-twist cord. No decoration is present on the sherds, which measure 5 and 6 mm thick, respectively.

Four small pieces of fired-clay daub or burned earth were also recovered from the site. All are orangish tan colored, irregularly shaped, and rough surfaced with no grass or pole impressions. No tempering is evident in any of the four. Judging from their small size and their lack of grass or pole impressions, the specimens are probably burned earth fragments rather than daub.

Lithic artifacts: Three pieces of debitage, including two blank decortication waste flakes and one secondary piece of shatter, were found at the site. The shatter is made of grayish brown chert with orangish limestone cortex. The flakes are both made of fossiliferous gray chert.

Faunal remains: One tooth fragment and four bone fragments were retrieved from the site. Two of the bone fragments display portions of articular surfaces. The other two appear to be long-bone fragments of a large animal. All the remains are unburned and somewhat eroded, and it is assumed on this basis that they are recent in age, the result of alluvial deposition.

Summary and conclusions

14CF395 is identifiable as representing the remains of a prehistoric camp site attributable, on the basis of admittedly limited ceramic evidence, to the Pomona focus of the Middle Ceramic time period. No structural remains were encountered, but evidence of hearths, in the form of a few scattered burned-earth fragments and small chunks of burned limestone, was found. Limited testing, however, failed to produce any evidence of sub-surface cultural manifestations. The site is sparsely represented, although only partially collected from, and is likely only a minor extension of 14CF394, the site in the northwestern side of the meander scar.

The site has been adversely affected by cultivation which, judging from the negative testing results, has succeeded in destroying most if not all of the site's primary archeological context. The site thus appears to have little or no investigative potential and is unlikely to yield any further archeologically significant information.

Site 14CF396

Site description

Research location: At an elevation of 1045-1050 ft, in the flood control pool, in the Flint Hills National Wildlife Refuge.

Soil type: Osage silty clay loam.

Setting: 14CF396 is in the bottomland on the immediate left bank of Lebo creek. The site covers an area approximately 150 X 100 m in size on the edge of a north-south-trending alluvial terrace at the open eastern end of a wide, westerly pointing loop of the creek. The site is bordered on the west by a sizable lowland area, and on the immediate north and again on the southwest by the creek. A north-south-trending treeline lies about a hundred meters to the east of the site, and another site, 14CF327, is located a short distance east of the treeline on a slightly higher alluvial terrace. The two sites may represent associated or even identical occupations.

Present conditions: The site is in a cultivated field and is receiving adverse impact from the effects of cultivation and occasional flooding.

Investigations

The site was visited on one occasion during the summer. The investigation consisted of pedestrian survey, the collecting of exposed archeological materials from the surface, and the taking of seven soil probes. The testing produced no evidence of subsurface cultural manifestations.

Historical research revealed that a building was present on or closely adjacent to the site in 1878 (Edwards Brothers 1878:51). The land, and presumably the building, was owned by a Matilda Jones. Judging from the low-lying topographic situation and the attendant danger of flooding, it is assumed that the building was a barn or some other kind of outbuilding rather than a residence.

Archeological materials

The archeological materials encountered at 14CF396 consisted of historic and prehistoric artifacts and scattered small chunks of burned limestone. All prehistoric artifacts were collected, along with a representative sample of the historic material.

Historic artifacts: The historic artifact inventory includes one salt-glazed stoneware rim sherd; two whiteware rim sherds and one body sherd, the latter and one of the former exhibiting molded decoration of uncertain design; two milkglass fragments, one of which is a portion of the neck of a screw-type container; and two large, rusted, unidentifiable metal fragments.

Prehistoric artifacts: The prehistoric artifact inventory consists of chipped stone and includes one projectile point and debitage.

The point is made of heat-treated, red and gray field chert, with cortex covering a portion of one face. The artifact is rather thick for its size, and has large percussive flake scars covering its surface, although small portions of the edges have been retouched. The point has a sharply pointed, triangular blade, with straight sides and rounded but prominent barbs, or shoulders, leading down to a rather short, moderately contracting stem with a subconvex base. The point is 43 mm long, with a blade length of 33 mm and a stem length of 10 mm. A shoulder width of 21.5 mm, a stem width of 14 mm, and a basal width of 10 mm were recorded. The point has a maximum thickness of 9 mm. Typologically, the artifact bears a resemblance to the Gary or the Dickson projectile point type (c.f. Bell 1958:28, and Montet-White 1968:64, respectively).

A total of 13 pieces of debitage, all waste flakes, was found at the site. The total includes one secondary decortication field chert flake and 12 blank decortication flakes. Six flakes, nearly 50 percent of the total, appear to have been heat treated.

Summary and conclusions

14CF396 is identifiable as representing the remains of an historic Euro-American farmstead, possibly deriving from the Matilda Jones farming operation of the 1870s, and the remains of a prehistoric camp site attributable, on the basis of lithic evidence, specifically the Gary-like projectile point, to one of the Early Ceramic or Middle Ceramic cultural complexes. The historic component is sparsely represented and is not historically significant. A few scattered chunks of burned limestone were found, perhaps representing a prehistoric hearth, but no evidence of prehistoric or historic structural remains or any other cultural features was encountered. Limited testing produced no evidence of subsurface cultural manifestations.

The site is being adversely affected by cultivation which, judging from the negative testing results, has succeeded in destroying most if not all of the site's primary archeological context. The site thus appears to have little or no investigative potential and is unlikely to yield any further archeologically significant information.

Site 14CF397

Site description

Reservoir location: At an elevation of 1045-1055 ft, in the flood control pool, in the Flint Hills National Wildlife Refuge.

Soil type: Lanton silty clay loam.

Setting: 14CF397 is in the bottomland on the left bank of Lebo creek. The site covers an area approximately 100 X 75 m in size on the end of a low-lying, southwest-northeast-trending alluvial ridge, at the open eastern end of a westerly pointing loop of the creek. The creek borders the site on the immediate northwest and again on the south. Bottomland lies to the west and to the southeast on the ridge, which is part of a broad, flat terrace formation stretching out to the north, east, and southeast. The nearest uplands are 400-800 m northeast of the site.

Present conditions: The site is receiving adverse impact from the effects of cultivation and occasional flooding.

Archaeological materials

The archeological materials encountered at 14CF397 consisted of historic and prehistoric artifacts and scattered small chunks of burned limestone. All prehistoric artifacts were collected. The historical material consisted of small, undecorated fragments of glass, whiteware, and metal. All were virtually uninformative and were therefore not collected.

Prehistoric artifacts: The prehistoric artifact inventory consists of chipped stone and includes one knife, three thin bifaces and six thick bifaces, two endscrapers, two retouched flakes, one utilized flake, two cores, and debitage.

The knife is a large, unbroken, triangularly shaped specimen made of fossiliferous gray chert. The artifact has slightly convex sides and base which exhibit little or no retouch. It is 85 mm long, with a maximum width of 41 mm and maximum thickness of 10 mm.

The three thin bifaces include two tip sections and one midsection from broken projectile points or knives. The midsection and one of the tip sections are made of coarsely textured tan and white chert. The remaining tip section is made of heat-treated, pinkish gray chert. The latter has a rounded tip and slightly convex sides, and displays light retouch. It is roughly 21 mm

long at present, 21 mm wide at the point of breakage, and 6 mm thick. The other tip section is similarly shaped but crudely flaked. It is 43 mm long at present, 31 mm wide at the point of breakage, and 7.5 mm thick. The midsection has straight, nearly parallel sides, and is crudely flaked along its edges. It is 37 mm long and 6.5 mm thick, with a maximum width of 19.5 mm and a minimum width of 17 mm.

The six thick bifaces are all very crudely flaked specimens. Four appear to be complete, while two are broken fragments of larger pieces. The two latter and one of the former are blank decortication specimens, one of which has been heat treated; the remainder are remnants of small field-chert cobbles. The four complete specimens are all roughly oblong in shape, and measure around 50-55 X 35-40 cm in size, with thicknesses ranging from 9 to 19 cm. Only two of the complete specimens are flaked along all their edges.

The endscrapers include one circular specimen and one of the oblong variety, the former made of fossiliferous gray chert and the latter of gray banded chert with white limestone cortex. Both scrapers are plano-convex, snubnosed, and keeled. The circular scraper is roughly 37 mm in diameter, with a maximum thickness of 15.5 mm. It has a thick, unfinished proximal end. The oblong scraper is 43 mm long, with a maximum width, at the bit, of 26 mm, and a maximum thickness of 9.5 mm.

One retouched flake was found. Made of a very thick, primary decortication field-chert flake, it has been steeply retouched along a small portion of its thinnest edge, and appears to be a simple test piece.

The two utilized flakes include one heat-treated, pink and tan chert flake and one grayish brown chert flake displaying a small amount of orangish limestone cortex. Both exhibit very light unifacial wear along one of their edges.

The two cores found at the site are both fist-sized field-chert specimens from which a few large flakes have been removed. Both cores are irregularly shaped.

A total of 35 pieces ofdebitage, including 28 waste flakes and seven pieces of shatter, was collected at the site. The total includes three primary, nine secondary, and 16 blank decortication flakes, and two primary, four secondary, and one blank piece of shatter. All primary and secondary specimens were derived from field-chert cobbles. Approximately 23 percent of thedebitage was heat treated.

Summary and conclusions

14CF397 is identifiable as representing the remains of an historic Euro-American farmstead and/or dump, and the remains of a prehistoric camp site of indeterminate age and cultural affiliation. The historic component is sparsely represented and is probably the result of chance deposition of artifacts rather than an historic occupation. It is not historically significant. No historic or prehistoric structural remains were encountered, but evidence of hearths, in the form of a few scattered chunks of burned limestone, was found. Limited testing, however, produced no evidence of subsurface cultural manifestations.

The site has been adversely affected by cultivation which, judging from the negative testing results, has succeeded in destroying most if not all of the site's primary archeological context. The site thus appears to have little or no investigative potential and is unlikely to yield any further archeologically significant information.

Site 14CF398

Site description

Reservoir location: At an elevation of 1050-1055 ft, in the flood control pool, in the Flint Hills National Wildlife Refuge.

Soil type: Lanton silty clay loam.

Setting: 14CF398 is in the bottomland on the left bank of Lebo creek. The site covers an area approximately 100 X 100 m in size on a broad alluvial ridge which is part of a broad terrace formation surrounding the site and stretching away to the south and southeast. Lebo creek lies about 150 m to the north, west, and southwest. A steeply sloping upland ridge, on which site 14CF382 is situated, is 50-100 m to the northeast, extending out from higher uplands lying to the east and southeast.

Present conditions: The site is in a cultivated field and has been adversely affected by cultivation and occasional flooding.

Investigations

The site was visited twice during the summer. The investigation consisted of pedestrian survey, the collecting of exposed archeological materials from the surface, and the taking of 16 soil probes. The probes produced no evidence of subsurface cultural manifestations.

Archeological materials

The archeological materials encountered at 14CF398 consisted of prehistoric ceramic and lithic artifacts, and faunal material. All materials were collected.

Ceramics: One small, cord-roughened, indurated-clay-tempered rim sherd was found at the site. The surface texture is fine and the core is laminated. The surface color is tan, and the core is dark gray. Surface treatment consists of a vertically cord-roughened exterior and a plain interior. Due to the erosion, the exact nature of the cord roughening could not be determined. The sherd is apparently undecorated, at least on its exterior. The rim is somewhat indented on its interior, and vertically folded at and just below the lip, as if the rim had been pushed together and the orifice of the vessel constricted while the clay was still plastic. It is somewhat doubtful that this was intended as decoration; more likely, it is functionally derived. Morphologically, the sherd lacks a neck section and is thus uninformative in that regard. The rim extends 30 mm straight downward from the lip, which has a more or less flattened shape. The lip and rim both measure 7 mm thick.

Lithic artifacts: Two chipped-stone bifaces, three retouched flakes, one chopper, one core, anddebitage were found at the site. The two bifaces are both thick, crudely flaked specimens. One, made of fossiliferous tan field chert, is more or less complete, and oblong in shape with very irregular edges. It is 74 mm long, 34 mm wide, and 16 mm thick. The other biface is the midsection of a longer specimen. Made of heat-treated, pink and gray banded chert, the fragment has a maximum width of 34 mm and a maximum thickness of 12 mm.

The three retouched flakes include one small specimen and two large, thick pieces. The former is made of mottled, gray and white chert, and is lightly retouched along one edge. The two large retouched flakes are both around 65 mm long, 45 mm wide, and 15 mm thick. One, a primary decortication field-chert flake, exhibits a wide, steeply retouched concavity on one of its shorter edges. The other, a heat-treated red, white, and gray, secondary decortication field-chert flake, displays steep unifacial retouch along almost all its edges, the retouch occasionally moving from one face to the other. Functionally, the artifact was probably used as a sidescraper.

The artifact classified as a chopper is a large, slab-shaped field-chert cobble measuring 130 cm long, 100 cm wide, and 50 cm thick. Large percussive flake scars cover portions of both faces,

and all edges of the artifact. However, only one long side of the piece has been bifacially worked into a sinuous edge; the remaining edges are thick and blocky. The long edge opposite the bifacial edge is somewhat saddle shaped; the two short ends are heavily battered.

The one core found at the site is made of grayish brown chert, and has orangish tan limestone cortex covering a portion of one end. The artifact is irregularly shaped, with large percussive flake scars covering most of its surface.

A total of 15 pieces ofdebitage, including 12 waste flakes and three pieces of shatter, was found at the site. The total consists of two secondary and ten blank decortication flakes, and one primary and two secondary pieces of shatter. Field-chert cortex was present on all primary and secondary specimens. One flake and one piece of shatter, or approximately 13 percent of thedebitage, appears to be heat treated.

Faunal material: One piece of bone was found. It appears to be a fragment of a long bone of a large animal, but is otherwise uninformative. It is unburned, and rather eroded, and is assumed to be recent, the result of alluvial deposition.

Summary and conclusions

14CF398 is identifiable as representing the remains of a prehistoric camp site attributable, on the basis of admittedly limited ceramic evidence, to the Pomona focus of the Middle Ceramic period. No structural remains or evidence of any cultural features were encountered on the surface of the site, and limited testing produced no evidence of subsurface cultural manifestations.

The site has been adversely affected by cultivation which, judging from the negative testing results, has succeeded in destroying most if not all of the site's primary archeological context. The site thus appears to have little or no investigative potential and is unlikely to yield any further archeologically significant information.

Site 14CF1316

Site description

Reservoir location: At an elevation of 1040-1050 ft, in the flood control pool.

Soil type: Verdigris silt loam.

Setting: 14CF1316 is in the bottomland on the immediate right bank of East Hickory creek. The site covers an area approximately 250 X 100 m in size on a low-lying, ill-defined alluvial ridge on the immediate right bank of the creek. The creek forms the eastern and southern boundaries of the site, and an east-west-trending treeline marks the apparent northern extent of the site. Low-lying uplands are located 30-40 m further north. A shallow, north-south-trending slough or drainage, converted into a shallow pond by the emplacement of a small manmade dam at its north end, forms the western boundary of the site.

Present conditions: The site is in a fallow field and is covered with grass, weeds, and small brush. The site was formerly cultivated and may have been at least partially disturbed during construction of the nearby dam.

Investigations

The site was visited on one occasion during the summer. The investigation consisted of pedestrian survey, the collecting of exposed archeological materials from the surface, and the taking of three soil probes, which revealed no evidence of subsurface cultural manifestations.

Archeological materials

The archeological materials encountered at 14CF1316 consisted of a few prehistoric ceramic and lithic artifacts, and a few scattered chunks of red sandstone which may be of natural origin. All artifacts encountered at the site were collected.

Ceramic artifacts: One small, heavily weathered, indurated-clay-tempered body sherd was found at the site. The surface texture is fine and the core is laminated. The surface color is tan and gray; the core is dark gray. The surface treatment appears to consist of a cord-roughened exterior and a plain interior. Due to the weathering, nothing specific can be determined concerning the nature of the cord impressions. No decoration is observable on the sherd. Morphologically, the sherd is uninformative.

Lithic artifacts: The lithic artifact inventory consists of chipped stone and includes one biface, one retouched flake, anddebitage. The biface is a thick, elongated piece, crudely flaked of gray chert. One end of the artifact has been broken off. The specimen has a maximum thickness of 8 mm, a maximum width of 15.5 mm, and an extant length of 50 mm.

The single retouched flake bears one edge which has been retouched. Made of heat-treated, pink and gray banded chert, the artifact is likely a simple test piece.

A total of 16 pieces of debitage, including 14 waste flakes and two pieces of shatter, were found at the site. The total includes three secondary and 11 blank decortication flakes, and two blank pieces of shatter. All secondary decortication specimens were derived from field-chert cobbles. Three of the flakes, or 17 percent of the total, appear to have been heat-treated.

Summary and conclusions

14CF1316 is identifiable as representing the remains of a prehistoric camp site attributable, on the basis of relatively diagnostic but quite limited ceramic evidence, to the Pomona focus of the Middle Ceramic period. No structural remains or evidence of any other cultural features were encountered at the site, and limited testing yielded no evidence of subsurface cultural manifestations. The site is sparsely represented, but this fact may be due in part to the poor collecting conditions at the time of the investigation.

The site has been adversely affected by cultivation, and possibly by the construction of the small dam to the west. Judging from the negative testing results, the site apparently has little or no investigative potential and is unlikely to yield any further archeologically significant information. It thus appears to be lacking in scientific significance.

Site 14CF1317

Site description

Reservoir location: At an elevation of 1055-1065 ft, in the flood control pool, in the Flint Hills National Wildlife Refuge.

Soil type: Woodson silt loam.

Setting: 14CF1317 is in the uplands above the left bank of Benedict creek. The site covers an area approximately 100 X 75 m in size on the edge of a low-lying, gently sloping upland bench which extends out from a high upland ridge located 300-400 m to the east. The bench continues on to the north and southeast. The site is bordered on the west and south by bottomland, with the present-day channel of Benedict creek lying 400-500 m to the west.

Present conditions: The site is in a cultivated field, portions of which have been agriculturally terraced. The distinctively colored upland subsoil has been exposed over much of the site, indicating that most if not all of the site's primary archeological context has been destroyed.

Investigations

The site was visited on one occasion during the summer. The investigation consisted of pedestrian survey and the collecting of exposed archeological materials from the surface.

Archeological materials

The archeological materials encountered at 14CF1317 consisted of prehistoric chipped-stone artifacts, all of which were collected. The inventory consists of one crude biface, one retouched flake, two utilized flakes, and debitage.

The single biface is made of heat-treated, pink and gray field chert and is incomplete, one side of the ovately shaped piece having been broken away. It is crudely flaked along its unbroken, convexly curved edge, with no evidence of retouch. The artifact is 8 mm thick and 38 mm long. The single retouched flake is made of heat-treated, pinkish gray chert. Broken on two sides, the artifact exhibits steep retouch along its remaining edges. The two utilized flakes both exhibit rather minimal unifacial utilization wear along one of their edges. One is made of gray field chert and the other is made of heat-treated, pink banded field chert. The debitage from the site includes nine waste flakes and one piece of shatter. The inventory includes one primary, two secondary, and six blank decortication flakes, and one blank piece of shatter. All primary and secondary decortication specimens were derived from field chert. Four flakes, or 40 percent of the total, were heat treated.

Summary and conclusions

14CF1317 is identifiable as representing the remains of a prehistoric camp site of indeterminate age and cultural affiliation. The site is relatively sparsely represented, with no structural remains or evidence of any other cultural features being encountered on the surface.

The site is receiving adverse impact from the effects of cultivation, and has been adversely affected in the past by terracing. Judging from the amount of subsoil brought to the surface of the site, most if not all of the site's primary archeological context has been destroyed. Judging as well from the paucity of the remains, the site apparently has little or no investigative potential and is unlikely to yield any further archeologically significant information. It thus appears to lack scientific significance.

Site 14CF1318

Site description

Reservoir location: At an elevation of 1040-1050 ft, in the flood control pool, in the Flint Hills National Wildlife Refuge.

Soil type: Verdigris silt loam.

Setting: 14CF1318 is in the bottomland on the right bank of the Neosho river. The site covers an area approximately 100 X 50 m in size on the end of a northerly pointing alluvial ridge, which is part of an alluvial terrace formation stretching out from the west and surrounding a large, prominent meander scar, an intermittent oxbow lake, the northern edge of which is 100-200 m south of the site. The site is bordered on the north and east by low-lying bottomland, with the river located 100-150 m to the north and east. The southern extent of the site is uncertain, since a thick cover of winter wheat covered much of the area at the time of our investigation. Hence, the site may extend south to the edge of the meander scar.

Present conditions: The site is in a cultivated field and is receiving adverse impact from the effects of cultivation and occasional flooding.

Investigations

The site was visited twice during the summer. The investigation consisted of pedestrian survey, the collecting of exposed archeological materials from the surface, and the excavation of nine 60 cm² test pits, each one 45 cm deep. The pits were located in a loose grid pattern, with six of the pits in the area covered by wheat. No cultural material was encountered in any of the pits.

Historical research revealed that a building was present a short distance to the west of the site in 1878 (Edwards Brothers 1878:51). The land, and presumably the building, was owned by a D. Legget. The building is presumably represented by numerous slabs of burned and unburned limestone located on a northerly pointing alluvial ridge 100-150 m west of 14CF1318.

Archeological materials

The archeological materials encountered at 14CF1318 consisted of historic and prehistoric artifacts, faunal material, and unburned limestone. All prehistoric artifacts and faunal material were collected. The historic material consisted of small, non-diagnostic debris (glass, metal, and whiteware fragments) which were considered to be of quite recent age. None were collected.

Prehistoric artifacts: The prehistoric artifact inventory consists of chipped stone and includes one projectile point, one retouched flake, and four pieces of debitage. The projectile point is a small, thin, triangular, side-notched specimen, made of fossiliferous gray chert. The point bears a single side notch on one side and double side notches on the other, positioned low on the body of the artifact. The base is subconvex in shape. The distal end is missing from the artifact, which is 2 mm thick and 12 mm wide. The estimated length is 24 mm. The single-side-notch/double-side-notches combination is atypical, suggesting that the artifact was broken and therefore unfinished during manufacture. Assuming this to be the case, the point is identifiable as an unfinished example of the Huffaker projectile point type (c.f. Bell 1960:58).

Along with the point, one retouched flake and four waste flakes were found. The retouched flake is made of tan banded chert with white limestone cortex. The flake is steeply retouched along one of its straight edges. The four waste flakes include one primary decortication flake made of field chert and three blank decortication flakes. Two of the flakes have been heat treated.

Faunal remains: A total of 13 small and unidentifiable bone fragments were found at the site. Two have been burned, and most of the group are markedly eroded.

Summary and conclusions

14CF1318 is identifiable as representing the remains of an historic Euro-American farmstead and/or dump, possibly derived from the D. Legget farming operation of the 1870s, and the remains of a prehistoric camp site attributable, on the basis of limited lithic evidence, to one of the Middle or Late Ceramic cultural complexes. The historic component is sparsely represented and is probably the result of the chance deposition of debris rather than an actual occupation of the site. It is not historically significant. No historic or prehistoric structural remains were found, but the presence of burned and unburned bone fragments suggest the possibility of prehistoric trash pits. Limited testing, however, yielded no evidence of subsurface cultural manifestations.

The site has been adversely affected by cultivation. Judging from the negative testing results and the paucity of the remains, the site apparently has little or no investigative potential and is unlikely to yield any further archeologically significant information.

Site 14CF1319

Site description

Reservoir location: At an elevation of 1055-1065 ft, in the flood control pool, in the Flint Hills National Wildlife Refuge.

Soil type: Dennis silt loam in the northern portion of the site, and Woodson silt loam in the southern portion.

Setting: 14CF1319 is in the uplands above the right bank of the Neosho river. The site is situated on the end of a northerly pointing upland ridge, part of a broad upland bench extending out from higher uplands located 800-1000 m to the south. Bottom-land borders the site on the west and north, with the river located 100-150 m to the north and northwest. To the east, a long narrow drainage separates 14CF1319 from 14CF1320, which is similarly situated on an upland ridge some 100 m west of 14CF1319.

Present conditions: The site is in a cultivated field and has been adversely affected by cultivation, which has brought the distinctively colored upland subsoil to the surface along the upper slopes of the ridge.

Investigations

The site was visited twice during the summer. The investigation consisted of pedestrian survey, the collecting of exposed archeological materials from the surface, and the excavation of eight 60 cm² test pits, dug to a depth of 45 cm below surface. No cultural evidence was found in any of the test pits.

Historical research revealed that a building was present in the area in 1878 (Edwards Brothers 1878:51). The land, and presumably the building, was owned by a L. E. A. Johnson.

Archeological materials

The archeological materials encountered at 14CF1319 consisted of historic and prehistoric artifacts, and a few scattered field-chert cobbles and small chunks of unburned limestone. All prehistoric artifacts and a representative sample of the historic material were collected.

Historic artifacts: One whiteware body sherd and one whiteware basal sherd were collected. The body sherd bears a floral-design transfer-print decoration on both sides of the sherd, along with an unidentifiable stamped imprint on one side only. The basal sherd is undecorated, and is from a container with an angular, likely octagonal or hexagonal, base.

Prehistoric artifacts: The prehistoric artifact inventory consists of one pottery sherd, a few lithic tools, and lithic debitage.

Ceramic artifacts: One heavily weathered, indurated-clay-tempered body sherd was found. It has a fine surface texture and a laminated core. The surface color is orangish tan; the core is gray. The surface treatment is obliterated due to the erosion. No decoration is observable. Morphologically, the sherd measures 5.5 mm thick but is otherwise uninformative.

Lithic artifacts: The lithic artifact inventory consists of chipped stone and includes two projectile points, one knife fragment, four utilized flakes, two cores, and debitage.

Both projectile points are small, thin, elongated specimens, with expanding stems formed by corner notching. Both are made of fossiliferous gray chert. One lacks its tip, one barb, and the opposite blade edge, and the other lacks its tip section and one tang. Both are rather crudely flaked. One is slightly serrated along its one extant blade edge. Both points have rather long, rapidly expanding stems with rounded tangs, but one has a sub-concave base and the other has a straight base. The subconcave-based point is 3.5 mm thick and has a shoulder width of 12 mm, a stem width of 6.5 mm, and a stem length of 5 mm. It is estimated to have been 23 mm long and to have had a basal width of 10 mm. The point is not only asymmetrical in outline, but is twisted in transverse cross-section, much like Pandale projectile points as described by Bell (1958:70). However, unlike the Pandale, the 14CF1319 point was probably made from a twisted or curved flake rather than produced intentionally. The other, straight-based point from the site is 3 mm thick and has a basal width of 7 mm, a stem width of 4 mm, and a stem length of 5 mm. The estimated total length of the point is 18 mm and the estimated shoulder width is 9 mm. Both points are typologically identifiable as representative of the Scallorn projectile point type (c.f. Bell 1960:84).

The knife fragment found at the site is a section of a large, alternately beveled, apparently diamond-shaped specimen, made of fossiliferous gray chert. It is somewhat crudely flaked, and possibly unfinished. The extant portion of the knife is 47 mm long, with a maximum width of 39 mm and a maximum thickness of 6 mm.

Four utilized flakes were found at the site. One is made of heat-treated red field chert, two of fossiliferous gray chert, and one of gray chert with white limestone cortex. All four exhibit rather minimal unifacial utilization wear along one of their edges.

Two cores were also found at the site. One is the remnant of a field-chert cobble; the other is fossiliferous grayish brown chert with tan limestone cortex. Both are irregularly shaped.

A total of 79 pieces of debitage, including 70 waste flakes and nine pieces of shatter, was collected. The total includes four primary, 15 secondary, and 51 blank decortication flakes, and two primary, five secondary, and two blank pieces of shatter. All secondary and primary decortication specimens were derived from field-chert cobbles. Approximately 26 percent of the debitage appears to have been heat treated.

Summary and conclusions

14CF1319 is identifiable as representing the remains of an historic Euro-American farmstead and/or dump, possibly derived from the L. E. A. Johnson farming operation of the 1870s, and the remains of a prehistoric camp site attributable, on the basis of limited but relatively diagnostic ceramic and lithic evidence, to the Pomona focus of the Middle Ceramic time period. No structural remains or evidence of any other cultural features were encountered at the site, and limited testing failed to produce any evidence of subsurface cultural manifestations. The historic component is sparsely represented, and may be the result of the chance deposition of artifacts rather than an actual occupation. It is not historically significant. The prehistoric component is somewhat better represented, but judging from the physiographic situation and from comparison of their artifact inventories, 14CF1319 may be a minor extension of nearby site 14CF1320.

The site has been adversely affected by cultivation. Judging from the amount of subsoil exposed along the upper slopes of the ridge, and the negative testing results, most if not all of the site's primary archeological context has been destroyed. The site thus appears to have little or no investigative potential and is unlikely to yield any further archeologically significant information.

Site 14CF1320

Site description

Reservoir location: At an elevation of 1055-1065 ft, in the flood control pool, in the Flint Hills National Wildlife Refuge.

Soil type: Dennis silt loam in the northern portion of the site and Woodson silt loam in the southern.

Setting: 14CF1320 is in the uplands above the right bank of the Neosho river. The site covers an area approximately 250 X 100 m in size on a prominent upland ridge overlooking a wide expanse of bottomland to the north. Higher uplands lie 500-700 m to the south. The site is bordered on the west by a long, narrow drainage which separates it from another site, 14CF1319. The eastern edge of 14CF1320 is defined somewhat arbitrarily by a gravel road, the construction of which may have destroyed portions of the site. A large, prominent, more or less U-shaped, westerly pointing meander scar is located in the bottomland a short distance east of the road. Site 14CF20, described by Rogers (1979:11-12) as an Archaic site on the basis of a putatively Nebo Hill-like projectile point, is located somewhere east of the road along the west edge of the meander scar. Unfortunately, the available information on 14CF20 is somewhat less than specific concerning its exact location, and the site could not be relocated during the 1979 field season due to the presence of a thick cover of winter wheat. Therefore, since the gravel road provided a clearcut, albeit artificial, boundary between the two site areas, and since separate occupations may be represented by the remains, the 14CF1320 area was designated as a separate site. It is possible, however, that the two sites represent associated if not identical cultural manifestations.

Present conditions: The site is in a cultivated field, with a narrow treeline along its eastern edge, next to the road. The site is receiving adverse impact from the effects of cultivation and has probably been adversely affected by the construction and ditching of the gravel road. The distinctively colored upland subsoil has been exposed along the upper slopes of the extreme northern edge of the site.

Investigations

Site 14CF1320 was visited on ten separate occasions during the season. The investigation consisted of pedestrian survey, the collecting of exposed archeological materials from the surface, the taking of numerous soil probes, the excavation of 14 small test pits, and the excavation of four complete 2 m² excavation units and portions of six others.

The test pits were located in a loose grid pattern across the length of the site. Most were narrow--around 40 X 60 cm in horizontal dimensions--so as to avoid destruction of the immature soybean crop then in the field. Pits in which sterile subsoil was encountered were dug to a depth of 45 cm below surface. The testing revealed a plow zone around 15-20 cm in depth, overlying a clayey subsoil. The friable brown dirt of the plow zone contrasted sharply with the subsoil, which gradiated quickly into a clayey texture and yellowish tan coloration.

In three of the test pits, significant cultural features were found which required the excavation of larger and more specifically located excavation units. Consequently, a locational grid of 2 m² units was established and the three test pits were expanded within the grid so as to enable the features to be adequately investigated (see Figure 9).

The three features were respectively interpreted as a trash-filled storage pit, F5, a trash-filled borrow pit, F29, and burned limestone concentration, F24. All are of prehistoric origin. Since the subsoil surrounding the two trash pits was bereft of cultural remains, the investigation of those two features was accomplished, after cross-sectioning of one of the pits, by digging the appropriate excavation units to a depth of 25 cm below surface, well into the top of the subsoil, and then excavating the features as units in and of themselves. The burned limestone complex, on the other hand, was spread loosely throughout the subsoil in a zone approximately 10-15 cm thick, immediately below the plow zone. Investigation of that feature was accomplished by digging the appropriate excavation units to just below the base of the feature, approximately 30-35 cm below surface. The larger pieces of burned limestone were pedestaled and left in situ during much of the excavation, but were eventually removed in an attempt to locate associated artifactual material.

Charcoal was plentiful in the two trash pits, and several samples were taken from various levels of both. The burned limestone complex had a comparatively sparse amount of charcoal but yielded a sample of adequate assay size. Soil samples approximately 30 cm square and 10 cm thick were taken from various levels of both trash pits, and were subsequently put through the water flotation process (c.f. Struever 1962, 1968b) in an effort to locate floral and faunal remains and similarly small-sized artifacts which might otherwise have escaped detection. Whenever possible, soil samples were "chunked" out, rather than thoroughly trowelled, in an attempt to minimize destruction of the remains. All light-fraction units were subsequently examined in the laboratory with the use of a microscope.

Interpreted Cultural Features: As mentioned, three intact prehistoric cultural features were located and excavated during the investigation of the site. The first to be discussed here was a burned limestone concentration, designated as F24. The feature was contained within a thin zone, 10-15 mm thick, located immediately below the plow zone in the west central portion of the site, on the shallow slope that drops down to the drainageway that forms the western boundary of the site. The base of the feature is similarly sloped, indicating that the topography of the area during the prehistoric occupation was much the same as the present.

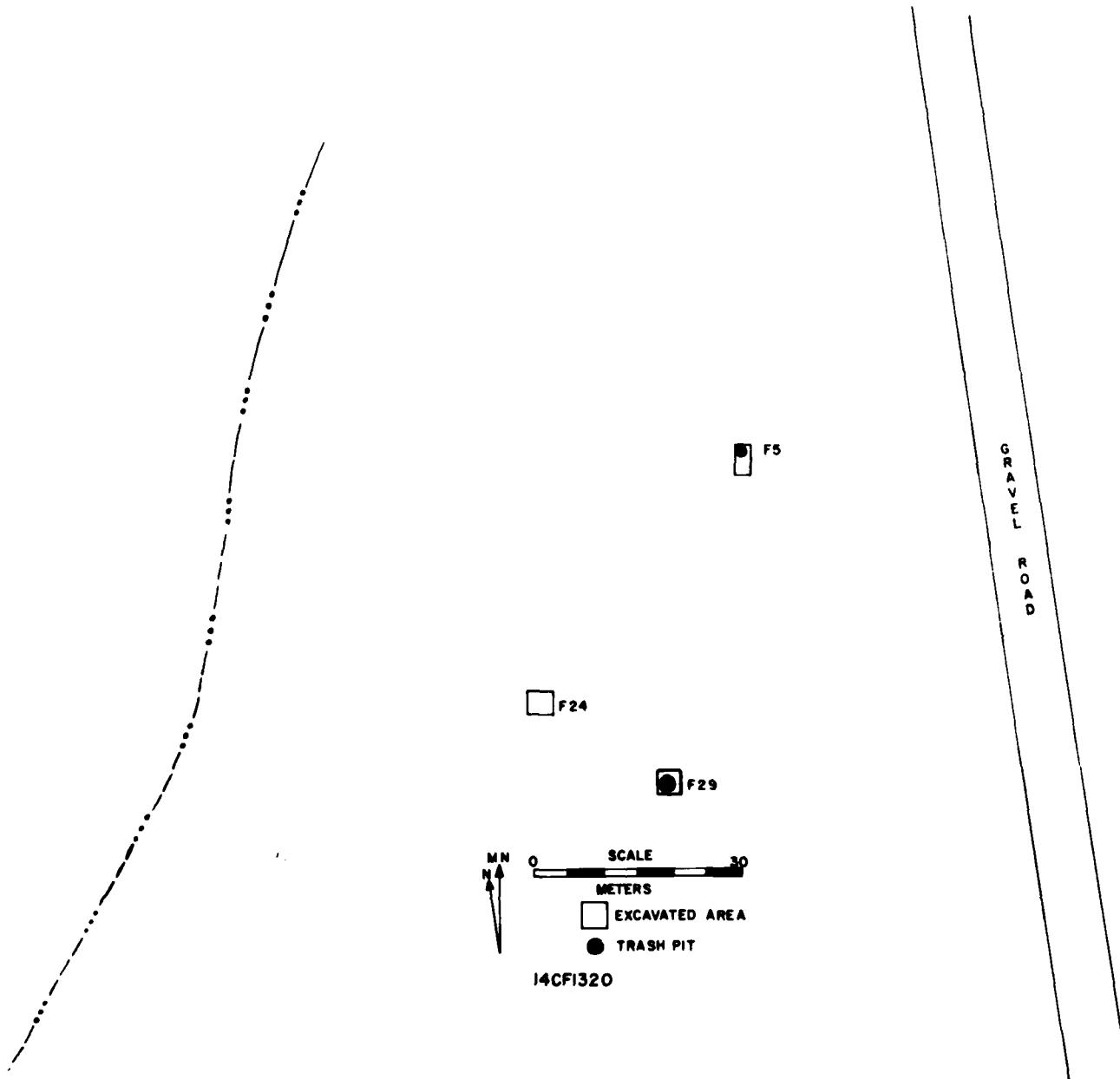


FIGURE 9. Map showing location of excavation units at 14CF1320.

Feature 24 consisted of a loose scatter of burned limestone and a few pieces of unburned limestone, accompanied by one cord-roughened and indurated-clay-tempered body sherd; three pieces of debitage; one small, smooth, river-rolled quartz cobble; one unburned and badly decomposed bone fragment; a few charcoal fragments; scattered charcoal flecking; and burned earth fragments. The burned earth was occasionally localized in fairly discrete clusters. and a few dark, amorphously shaped soil stains were also present. In the plow zone above the feature, more burned limestone and five pieces of debitage were found, indicating that the feature had been partially truncated by plowing. Within the undisturbed portions of the feature, the burned limestone ranged in size from small slabs down to pebble-sized fragments. None of the limestone was arranged in any sort of recognizable pattern, as one would expect in a hearth, but several fairly discrete clusters of rock were present. The excavation failed to expose all of F24, despite the digging of nine square meters of area. As revealed in the walls of the excavation, burned limestone continued on in all directions, primarily to the north and south.

Similar rock complexes have been reported from other excavated sites in the eastern Kansas and Oklahoma area. They have generally been interpreted as hearths, or, more equivocally, as possible hearths, but it has also been speculated that such concentrations might represent the floors of sweatlodges (Moore and Birkby 1962:59-65). At the Gilligan site, an excavated Plains Woodland Greenwood phase site in John Redmond reservoir, several burned limestone and sandstone complexes similar to that of 14CF1320 were encountered. Three of those complexes, in which the stone had been only partially subjected to heat and around which none of the surrounding soil had been burned, were described as looking "...as if the stone had been deposited there from another use area" (Jones and Witty 1980:73).

Judging from the presence of abundant but loosely scattered burned limestone, the lack of any clear evidence of burning in place, the paucity of artifacts, and the peripheral location of the F24 concentration, the feature is interpreted to be a thin, scattered midden deposit resulting from the dumping of discarded boiling stones and/or hearth rock. Judging from the presence of some unburned limestone along with an occasional artifact, charcoal and burned earth fragment, it seems most likely that the feature represents discarded hearth debris. The possibility of a sweatlodge origin, however, should not be entirely discounted.

The other two features at the site are both trash-filled pits. One, F29, was a large relatively shallow, basin-shaped pit, approximately 2.35 m long and 2.04 m wide at its orifice just below the base of the plow zone. The pit extended to a

depth of 75 cm below surface, approximately 55 cm below the base of the plow zone. It had shallowly sloping walls and an irregular but generally flat floor (Figure 10,A).

Feature 29 consisted primarily of an unstratified, dark brown fill, nearly black in color, which contrasted sharply against the surrounding tan subsoil. The fill contained a variety of ceramic and lithic artifacts, two *Chenopodium* seed fragments, 13 unidentifiable pieces of burned bone, one mollusc-shell fragment, 12 small pieces of burned limestone, and one fairly discrete charcoal concentration along with abundant scattered charcoal flecking. Some sorting by size and/or weight was apparent, since the largest and heaviest artifacts were concentrated at or near the bottom of the pit. The upper portions of the feature mainly contained lithic debitage.

The ceramic artifact inventory from F29 consists of 52 pottery sherds and 12 untempered, rough-surfaced, burned earth fragments. The pottery, which includes three rim sherds and 49 body sherds, is identifiable as Pomona ware (c.f. Wilmeth 1970:29-33). Twenty-seven of the body sherds fit together, forming portions of the body of a single very friable and fragmented vessel. All of the pottery is tempered with indurated clay, but four body sherds, approximately eight percent of the total number of sherds recovered from the feature, are tempered with crushed burned bone as well.

The lithic artifact inventory from F29 consists of both chipped stone and ground stone. The chipped stone includes one small, plain, triangular projectile point, typologically identifiable as a Fresno point (c.f. Bell 1960:44), one small, thin, triangular, corner and basally notched projectile point preform, one biface, identifiable as the midsection of a medium-sized projectile point or knife, two retouched flakes, three utilized flakes, one hammerstone, six cores, and 840 pieces of debitage. The inventory has a high percentage of primary and secondary decortication specimens, almost all of which were derived from field chert. One of the cores, one of the retouched flakes, and a few pieces of debitage have white limestone cortex.

The ground-stone artifact inventory from F29 includes worked and unworked sandstone and hematite fragments. Two small, angular hematite fragments were found, one of which appears to have been slightly ground, and a fist-sized concentration of hematite flecks was also encountered. A total of 19 pieces of sandstone was recovered. The pieces range in size from fist-sized cobbles down to small fragments. Five medium-sized, roughly slab-shaped pieces are worked, but the rest are unmodified. Two of the worked pieces have flat ground surfaces, two others have relatively narrow, U-shaped grooves, and one has a V-shaped groove.

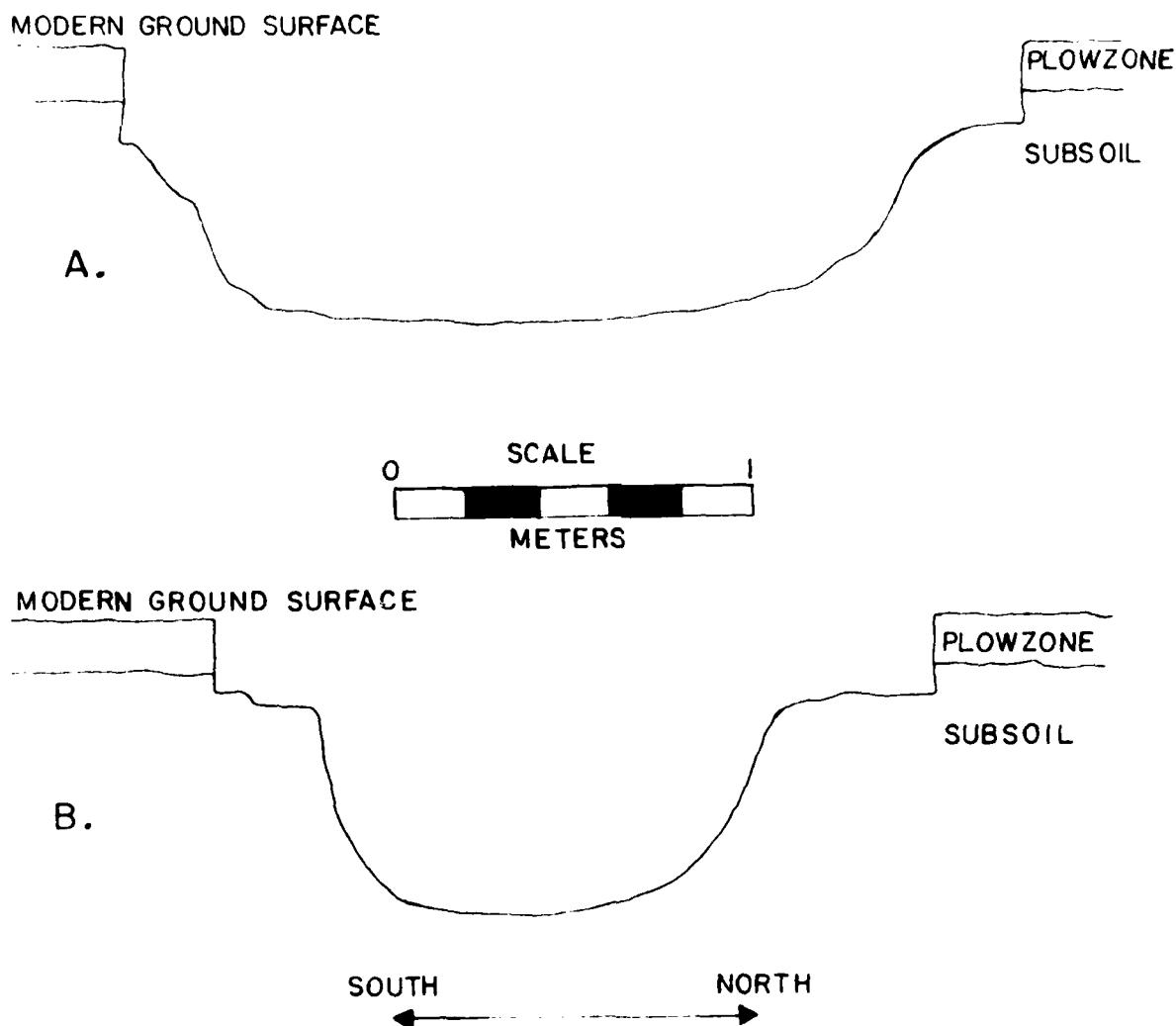


FIGURE 10. A. Cross-sectional representation of F29, 14CF1320, after excavation.
B. Cross-sectional representation of F5, 14CF1320, after excavation.

Judging from these characteristics, the large size of the feature, its shallow, somewhat irregular, basin-like shape, and the presence of assorted household debris in a top-soil-like soil matrix, the present writer interprets F29 to be a borrow pit which was subsequently filled with trash along with soil from the surrounding ground surface. No stratification is apparent within the feature, indicating that deposition of the fill was relatively uninterrupted. The remains are thus apparently representative of either a single occupation or several occupations very closely spaced in time. In corroboration of this inference, the diagnostic ceramic and lithic artifacts are indicative of a single component, identifiable as a manifestation of the Pomona focus of the Middle Ceramic time period.

The other trash filled pit, and the last of the three features to be described, was designated as F5. The feature (see Figure 10,B, and Figure 11) was a more or less cylindrical pit with a circular to slightly oval orifice measuring 1.35 m X 1.15 m in size, vertical to very shallowly sloping walls, and a subconcave floor extending to a depth of 70-74 cm below surface. The pit had been at least partially truncated by plowing.

Feature 5 contained a dark brown fill, rather friable in texture, which contrasted sharply against the surrounding tan subsoil. The fill was essentially unstratified, as evidenced by the fact that fits were found between pottery sherds from the upper and lower levels of the feature, but at least one fairly discrete ash concentration was encountered. Along with the ash, the feature contained numerous ceramic and lithic artifacts, a few pieces of daub and burned earth, seven nut-shell fragments, a few faunal remains, including several mollusc shells and shell fragments, a few pieces of burned limestone, and an abundance of charcoal and charcoal flecking.

The ceramic artifact inventory from F5 consists of 391 pottery sherds and 81 pieces of daub and/or burned earth. The pottery sample contains 38 rim sherds and 353 body sherds representing the remains of at least four vessels, if not more, including one crudely made miniature vessel. The cord-roughened, indurated-clay-tempered pottery is clearly identifiable as Pomona ware (c.f. Wilreth 1970:29-33), but exhibits some unusual attributes, primarily the limited presence of shell tempering. Twenty-two sherds, or 5.6 percent of the total, exhibit a small to moderate amount of shell temper in combination with indurated clay. "Cell" tempering of the kind common to leached shell-tempered pottery is displayed by 37 other sherds, and 29 others are tempered with a material which is either shell or bone. The latter material could not be identified more specifically without X-ray analysis, unavailable at the time of the writing of this report. Taken together, the three groups of sherds comprise approximately 24.6 percent of the

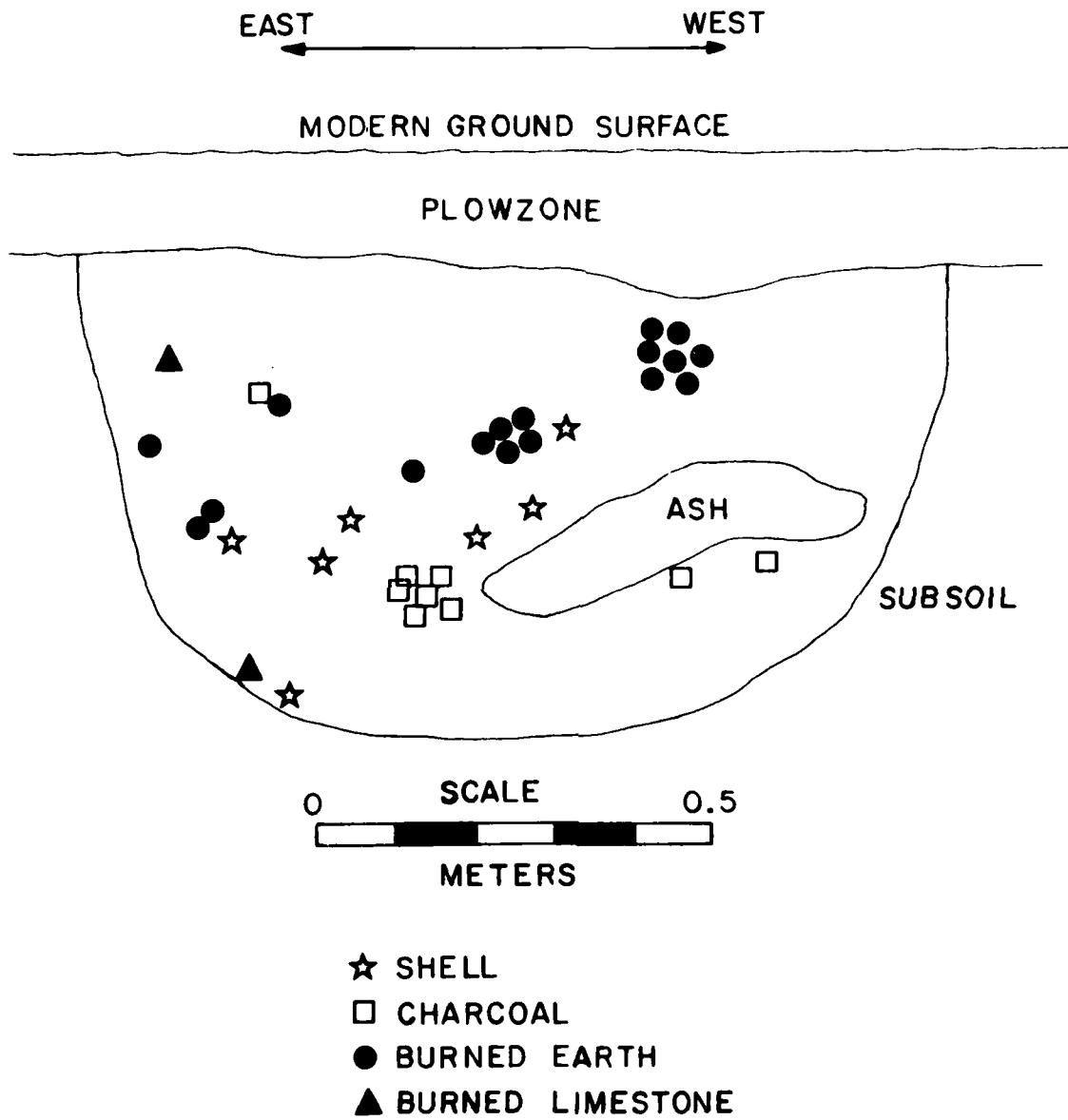


FIGURE 11. Cross-sectional view of F5, 14CF1320, during excavation.

pottery recovered from F5. In addition to those sherds, one rim sherd and two body sherds are partially covered with what appears to be a shell-tempered slip. The burned earth is also interesting in this regard, since two fairly large pieces of burned earth contain inclusions of shell. Both pieces are markedly rough surfaced and irregularly shaped, and may represent fired potter's clay. The rest of the burned earth is untempered. Eight of the pieces display grass impressions, and eight others exhibit pole or twig impressions.

The lithic artifact inventory from F5 consists of both chipped stone and ground stone. The chipped stone includes a small triangular biface which may be a projectile point preform, a tip section of a projectile point or knife, two beveled knife fragments, six retouched flakes, five utilized flakes, two field-chert cores, and 202 pieces of debitage. About half of the debitage consists of very small flakes which would probably not have been recovered if the water flotation technique had not been employed.

The ground-stone inventory from F5 includes worked and unworked sandstone and hematite fragments. A total of three pieces of sandstone was collected from within the feature, with three more pieces being recovered from the plow zone above it. The three pieces recovered from within the feature are all fist-sized, slab-shaped specimens which have been ground flat along one of their faces. The three pieces from the plow zone are smaller, irregularly shaped, unworked fragments. A total of 17 pieces of hematite was recovered, with one other piece being found in the plow zone. Eight of the pieces are very small fragments recovered by means of the water flotation technique. Two of the larger pieces from the feature appear to have been lightly ground along one face, but the other pieces are unmodified.

Archeological materials

The archeological materials encountered at 14CF1320 consisted of historic and prehistoric artifacts, daub, faunal remains, charcoal, burned earth, sandstone, hematite, and burned limestone. All prehistoric ceramics and lithic tools, hematite, faunal remains, and daub were collected from the surface of the site, along with a representative sample of the lithic debitage and the historic material. Within the excavation units, all archeological materials other than burned limestone were collected.

Historic artifacts: Two stoneware pottery sherds were collected from the surface of the site. One, a basal sherd, has an Albany-glazed interior and a salt-glazed exterior. The other, a body sherd, has a Bristol cream glaze on its exterior and interior

surfaces. Very few other historic remains of any sort were encountered at the site.

Prehistoric artifacts: The prehistoric artifact inventory consists of ceramic and lithic artifacts. The ceramic inventory includes both pottery sherds and burned earth and/or daub. The lithic inventory includes chipped-stone and ground-stone tools anddebitage.

Ceramic artifacts: A total of 157 pottery sherds and 112 pieces of burned earth and/or daub was recovered during the investigation of 14CF1320. The pottery includes 44 rim sherds and 473 body sherds, representing at least six vessels, if not more. The burned earth includes 12 grass-impressed pieces, eight pole or twig-impressed pieces, and 92 pieces of burned earth, some of which may be fired potter's clay.

The bulk of the pottery was attributable to F5, with 391 sherds being recovered from within the feature and 45 sherds from the adjacent plow zone. F29 contained 51 sherds, three others being found in the plow zone overlying it. F24 yielded one sherd, and a total of 26 sherds were collected from various locations on the surface of the site.

Indurated-clay temper is observable in the paste of almost all the pottery, with the particles ranging in size from very small to large (ca. 6-7 mm in diameter), but in some cases, bone and shell were also used as tempering in combination with the indurated clay. A total of five bone-tempered sherds was found, four from within F29 and one from the general surface of the site. They account for 1 percent of the site inventory. A total of 22 shell-tempered sherds, or 4.3 percent of the inventory, were recovered. All were from within F5. In addition, "cell" tempering of the kind common to leached shell-tempered pottery is present in 48 sherds, 37 of which came from F5 and the remainder from the surface of the site. Fifty-one other sherds are identifiable as being tempered with either shell or bone, but the particles could not be identified more specifically without X-ray analysis, unavailable at the time of the writing of this report. Most of the bone/shell sherds came from F5, and can thus be assumed with some confidence to be shell tempered. Moreover, some of the bone/shell sherds were so similar in morphology, color, thickness, etc., to certain of the shell-tempered sherds that they are likely from the same vessel. Grouped together, the shell, "cell," and probable shell-tempered sherds amount to 23.4 percent of the pottery recovered at 14CF1320. Analysis suggests, however, that more of the pottery had been shell tempered, or that shell tempering was localized within individual vessels. Some of the indurated-clay-tempered sherds, like the bone/shell sherds, are so similar in morphology, color, thickness, etc., to certain of the shell-tempered sherds that they were likely from the same vessel.

Several other characteristics of the paste bear mentioning. Generally, all the pottery has a rather sandy texture. The sand is very fine grained and not particularly abundant, likely a naturally occurring constituent of the clay rather than an intentionally added tempering agent. Small, discrete, amorphously shaped and variably sized blackened areas are also quite common in the paste of most of the sherds. These areas may represent naturally occurring elements, perhaps manganese or shale with a high organic content, but could also be carbonized organic material such as grass or burned shell and/or bone. Hematite flecks are also present in the pottery, but only to a limited degree. These may be naturally occurring constituents of the clay, but the presence of a number of hematite fragments at the site suggests the possibility that crushed and/or powdered hematite may have been purposely added to the paste.

The consistency of the paste also deserves attention. While most of the sherds have cord-roughened exteriors and scraped or wiped interiors, their surfaces and cores are quite commonly cracked, often prominently. The cracking is irregular in pattern and is more common on interior surfaces than on exteriors. Cracking of this sort would seem to indicate that the clay was not worked thoroughly enough and/or that the finished vessels dried too fast.

The other notable paste characteristic is the presence of scumming, or efflorescence, observable in varying degrees on a dozen or so sherds. This characteristic usually results from the presence of gypsum, a hydrated calcium sulfate, in the clay (Grisafe and Bauleke 1977:5). The scumming effect is produced both during the drying period and again during the periods of wetting and drying of the fired ware.

Surface textures of the sherds are typically fine, with the sandiest sherds bordering on medium coarse. Cores range from laminated to contorted, with many sherds being markedly contorted. A few of the sherds have rather friable cores, and a few of the sandier sherds have compact cores.

It should be mentioned in this regard that the shell-tempered sherds have cores with a contorted texture quite similar if not identical to the rest of the inventory. Many of the individual particles of shell are oriented perpendicular to the surfaces of the sherds. This condition is quite unlike most of the shell-tempered pottery wares of the late prehistoric period, which typically exhibit highly laminated cores with the shell aligned in an overlapping, plate-like fashion, parallel to the vessel walls.

The surface color of the pottery ranges from light tan to dark gray, with various shades of brown and orangish tan predominating. "Firing clouds" are common. Core colors range from light tan to dark gray, with gray predominating. Generally, there was little or no gradation between cores and surfaces. The cores are typically contained in a very discrete fashion between, and standing in sharp visual contrast against, the surfaces of the sherds. Indurated-clay particles within the paste range from light gray to orangish tan, but are typically orange or reddish brown, often in sharp visual contrast to the color of the surrounding sherd matrix.

The surface treatment of the pottery consists primarily of cord-roughened exteriors and plain, scraped or wiped interiors. Approximately 59.4 percent of the sherds have cord-roughened exteriors, 33.3 percent smoothed-over cord-roughened exteriors, and 7.3 percent plain exteriors. The cord roughening consists primarily of parallel cord impressions, but criss-cross cord roughening is common on many of the body sherds. The parallel cord roughening is predominately vertically oriented, judging from the few rim and neck sherds, but three rim sherds display diagonal cord roughening. Cordage used in producing the cord roughening was fine to medium gauge in size, with both S-twist and Z-twist cordage being employed. A total of 51 instances of the former are detectable, and 12 instances of the latter.

Approximately 33 percent of the sherds have scraped or wiped interior surfaces. The interior surfaces of many of the sherds are slightly to markedly lumpy, or inconsistent in thickness. Approximately 75 percent of the sherds display this characteristic, with most of the remaining sherds being too small to reveal such a relative attribute. Lumpiness was not present, however, on the exterior surfaces of the pottery. This condition appears to be the result of the potter using his or her hand as an anvil during the cord roughening of the exterior.

In terms of vessel morphology, small to medium-sized jar-type vessels are indicated by the remains, along with one crudely made miniature vessel. The latter, represented by two shell-tempered rim sherds and two body sherds, all recovered from F5, is a simple, undecorated, bowl-type vessel with a flattened lip.

Several body sherd fits were found among the other sherds. The reconstructed body sections indicate vessels which were decidedly globular in shape. The body sherds range from 3.5-15 mm in thickness, with an average of 6.45 mm. Shoulder sherds were often quite thick. No significant differences in the thickness of body sherds from the various features and areas

of the site were encountered. Body sherds from the surface and plow zone of the site averaged 6.7 mm thick, those from F5 6.4 mm, and those from F29 6.5 mm.

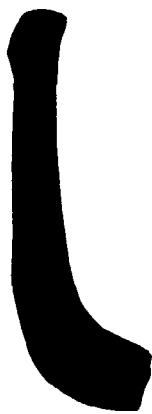
The rim sherds and neck sherds, excluding those from the miniature vessel, represent or appear to represent globular, jar-type vessels with more or less vertical rims overlying well-defined necks and expanding shoulders. The shoulders range from nearly flat to shallowly sloping. Two rim sherds, lacking necks but with an extant rim height of 56 mm, attributable to a single vessel, may represent the remains of a bowl-type vessel.

Two types of rim form are present, collared and straight. The collared rims (see, for example, Plate 8,B) are of the S-shaped, channelled variety, slightly thickened at mid-height and heavily cord roughened at the neck. Eleven collared rim sherds were found, seven of which can be attributed to a single vessel on the basis of fits and/or similarities in shape, color, thickness, texture, etc. The remaining 31 rim sherds were classified as straight, but many of these are small lip/rim fragments without neck junctures which could easily have come from collared vessels. Seven straight rims with neck junctures were found, three of which are attributable to a single vessel.

Taken as a group, the rims with necks range in height from 15-50 mm, with an average of 30.5 mm. This statistic is somewhat skewed, however. Only three rims, the three straight rims attributable to a single vessel, are 15 mm in height. All other measurable rims ranged from 30-50 mm in height with an average of 36.3 mm. The rims as a group range from 4-12 mm in thickness at mid-height, with an average of 7.6 mm. Lips are predominately rounded, with several being narrowed to a fairly sharp, pointed edge and a few others being slightly flattened. The lips range from 3-7 mm in thickness, with an average of 4.1 mm.

Decoration of the pottery consists of collaring, already discussed, and tool impressions, present on the lips of two indurated-clay-tempered rim sherds. The two sherds were both found in F29 and are apparently from the same vessel. One of the two sherds is pictured in Plate 8,A. The rounded impressions were produced by impressing a dowel or cord-wrapped stick onto the lip horizontally, at an oblique angle to the path of the rim. The impressions are approximately 6 mm deep and 5 mm wide and are spaced 5-6 mm apart. Their application resulted in a slight downward and outward displacement of the clay, creating a thick, crenellated lip.

Other ceramics at the site include 112 pieces of burned earth. Twelve pieces are grass impressed and hence classifiable as daub. Eight of those were recovered from F5, two from the



A



B



PLATE 8. Selected ceramic artifacts from 14CF1320.

plow zone above F5, and two from F29. Eight other pieces, all from F5, have at least one smooth, concave surface and may be pole impressed. Of the remaining burned earth, 65 pieces were recovered from F5, 17 from the plow zone above F5, and 10 from F29. Most are small, irregularly shaped lumps. The pieces recovered from F5, however, are larger and more variegated in appearance. Some exhibit scumming on their surfaces, and two have small inclusions of shell. Those two pieces are interpreted as fired potter's clay.

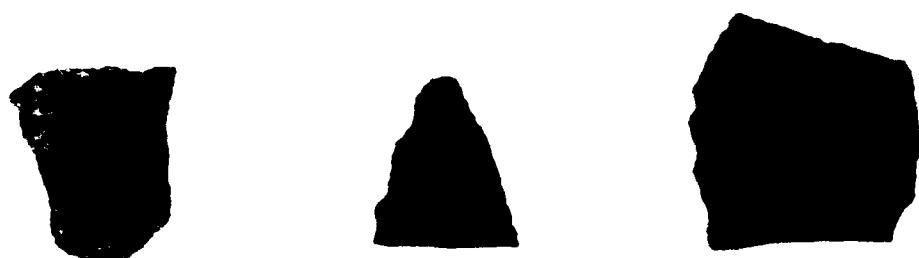
Lithic artifacts: The lithic artifacts recovered from 14CF1320 include both chipped-stone and ground-stone specimens, primarily the former. The ground stone consists of a few sandstone abraders and small grinding stones along with several small and fragmentary pieces of hematite, almost all of which appear to be unworked. The chipped stone consists of a few tools, including projectile points, knives, endscrapers, biface, retouched flakes, and utilized flakes, along with several cores and a large amount of debitage. Provenience of the lithic material is mixed, with most of the tools and diagnostic specimens coming from the surface and the remainder from F5 and F29. Only three pieces of debitage and one possible hammerstone were found in F24.

Projectile points: A total of five projectile points was found at 14CF1320, along with several bifaces classifiable as projectile point preforms. None of the projectile points are whole. One, made of fossiliferous gray chert, lacks one corner of its base (see Plate 9,A). It is a small, thin, plain, triangular point with slightly convex sides and a rounded basal corner, or tang. The artifact has been symmetrically and obviously carefully shaped, but is only lightly retouched along its extant edges. It is 2 mm thick, 19 mm long, and 13 mm wide, and was found near the bottom of F29. Typologically, the artifact is identifiable as a representative of the Fresno projectile point type (c.f. Bell 1960:44).

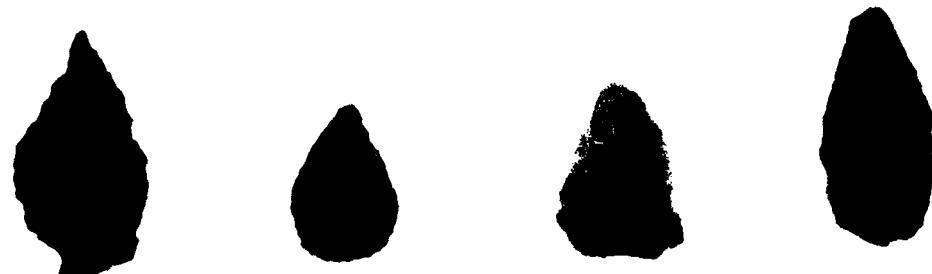
A second point (Plate 9,B), also from F29, could almost as well have been classified as a preform. Made of heat-treated, reddish colored, fossiliferous chert, it is small, thin, subtriangular, and almost lanceolate in shape, but exhibits only minimal bifacial flaking. Unifacial flaking, often rather steep, is present on almost all the edges of the artifact. It is basally notched, and is corner notched on one side. The opposite side was apparently broken away and subsequently resharpened, and lacks a barb or notch. The resharpened edge swings down in a smooth, subconcave curve from the shoulder down to the base. The point is 2.5 mm thick, 17 mm long and has a maximum width of 9 mm. No clearcut typological affinities were inferred for the artifact, although the Scallorn point type (c.f. Bell 1960:84) would seem to be the most likely choice.



A B C D E



F G H



I J K L



PLATE 9. Selected lithic artifacts from 14CF1320.

The other points from the site were all found on the surface. One (Plate 9,C), is a small, thin, elongatedly triangular, notched point, from which the stem and base have been broken away. Made of finely textured, heat-treated, pinkish white chert, the point is 3 mm thick and has a shoulder width of 10 mm and a blade length of 17 mm. The artifact is likely a representative of the Scallorn projectile point type (c.f. Bell 1960:84), although the lack of a stem and base makes this inference somewhat tentative.

One point (Plate 9,D) is a medium-sized, corner-notched specimen, made of heat-treated, fossiliferous pinkish gray chert. Both barbs and the extreme tip of the blade have been broken away, and a large flake is missing from the base. The artifact has a triangular, straight-sided blade, along with a moderately expanding stem and subconvex base. The point is 5.5 mm thick and 33.5 mm long, and has a basal width of 18 mm and a stem width of 14.5 mm. The stem length is around 7-8 mm. Typologically, the artifact appears to be a representative of the Ellis projectile point type (c.f. Bell 1960:32).

The last of the five points to be discussed consists of only the stem section of a medium-sized, expanding-stemmed point (see Plate 9,E). Made of fossiliferous gray chert, the specimen has a subconvex, almost straight, base of which the edges have been ground. The moderately expanding stem is 5 mm thick and 8 mm long. The stem width is 13 mm, the basal width 16 mm. Typological affinities for the artifact are uncertain due to the lack of a blade.

Knives: Sections of three separate alternately beveled knives were recovered from 14CF1320, one from the surface and two from F5. All are made of fossiliferous gray chert. The surface find (Plate 9,F) is apparently a stem or basal section from which the rest of the knife has been broken away. The fragment has subconcave sides and a convex, bifacially worked base, and is 7 mm thick with a maximum width of 23 mm. Of the two F5 knife fragments, one (Plate 9,G) is a triangular-shaped tip section with a slightly rounded tip. It is 5 mm thick and has a maximum width of 22 mm. The other (Plate 9,H) is a wide, somewhat crudely flaked specimen with subconvex sides. It is 5.5 mm thick and has a maximum width of 35 mm.

Bifaces: A total of 25 chipped-stone artifacts from 14CF1320 were classified as bifaces. One (Plate 9,I), recovered from the surface, has a sharp, slender point on one end, and may have been used or intended for use as a punch or graver. Made of heat-treated, grayish red field chert, the specimen is asymmetrical and roughly ovoid in shape. It is crudely worked, with only the tip of the artifact being bifacially flaked. The base and midsection are almost entirely unifacially worked. Most of one face of the artifact is covered by cortex, and the base is only very minimally shaped. The specimen is 8 mm thick, 39 mm long, and has a maximum width of 21 mm.

Another biface, also from the surface of the site, is undoubtedly a preform for a projectile point of the small, thin, triangular variety. Made of fossiliferous gray chert, the specimen (Plate 9,J) is small, thin, and ovately triangular, with markedly convex sides and base. The edges of the base and midsection exhibit careful but rather minimal bifacial retouch, but the tip section is unifacially worked. The tip itself is unfinished and somewhat thick in comparison. The artifact is 3 mm thick and 24.5 mm long, and has a maximum width of 16.5 mm.

One other biface, recovered from within F5, may also be a preform for a small, thin, triangular projectile point. Made of tan field chert, the artifact (Plate 9,K) is subtriangular in shape, with subconvex sides and base. It has been bifacially flaked, but very minimally so. The specimen is 6 mm thick, 27 mm long, and 20 mm wide.

One other biface (Plate 9,L) may be a preform for a medium-sized projectile point, but is more likely simply a small cutting tool. Made of heat-treated tan field chert, the specimen was recovered from the surface of the site. It is ovoid or elongatedly triangular in shape, and crudely flaked, with a rounded tip, subconvex sides, and an unfinished base. The artifact is 6.5 mm thick, 37 mm long, and 17.5 mm wide.

Ten bifaces are recognizable as sections of medium-sized projectile points or knives. One tip section was recovered from within F5, one midsection from within F29, and one tip section from the plow zone above F29. The remainder, including two tip sections, four midsections, and one basal section, came from the surface of the site. Most of the point/knife fragments are made of fossiliferous gray chert. The F29 plow-zone specimen and the two tip sections from the site surface are made of heat-treated pinkish chert, and one of the midsections from the surface is made of heat-treated, pink and white banded chert. The latter specimen has been carefully retouched along its broken tip edge. The F29 midsection has been heavily ground and/or utilized along one edge, and one of the tip sections from the site surface is asymmetrically shaped and crudely flaked, but otherwise, the point/knife fragments are relatively uninformative.

Eleven other bifaces were found at the site, all on the surface, but they are amorphously shaped and crudely flaked. Only three are whole, the rest are sections of larger, broken artifacts. The three whole specimens are roughly circular in shape. All eleven bifaces are presumed to be crude cutting tools or test pieces. Six appear to have been heat treated; the others are made of fossiliferous gray field chert and tan-colored field chert.

Endscrapers: Two endscrapers were found at 14CF1320, both on the surface of the site. One is unbroken. The other is missing a large flake from its bit, and the butt end has been broken off. The unbroken specimen is made of fossiliferous gray chert, the other of tan field chert. Both are keeled, and rather crudely flaked. The whole scraper is 33 mm long and has a maximum width, at the bit, of 20.5 mm, and a maximum thickness of 8.5 mm. The broken specimen is presently 31 mm long and has a maximum width, at the bit, of 25 mm, and a maximum thickness of 9 mm.

Retouched flakes: A total of 16 retouched flakes were discovered at 14CF1320. Six were recovered from within F5, two from within F29, two from the plow zone above F29, and six from the surface of the site. Five of the group appear to have been heat treated. Eight of the others are made of fossiliferous gray chert, one of which exhibits white limestone cortex. The remaining flake of the group is made of a coarsely textured, caramel-colored, Jasper-like material which was not represented elsewhere in the inventory.

Utilized flakes: A total of 15 utilized flakes were found at 14CF1320. Five were recovered from within F5, three from within F29, and seven from the surface of the site. Three appear to have been heat treated, nine are made of fossiliferous gray chert, and three were derived from tan field chert. Three of the group exhibit bifacial utilization wear and the remainder displays unifacial wear. Utilization wear was minimal on all 15 specimens.

Cores: A total of 19 cores was found at 14CF1320. Two were recovered from F5, six from F29, one from the F24 plow zone, and ten from the surface of the site. All but two are remnants of field-chert cobbles; one of the two is made of fossiliferous gray chert with white limestone cortex, and the other is a blank decortication specimen of fossiliferous gray chert. Several of the cores are little more than very large, modified pieces of shatter. All are irregularly shaped.

Hammerstones: Two hammerstones were found at 14CF1320, one within F29 and one within the plow zone above F24. The F29 specimen is a tan-colored field-chert cobble. It is approximately fist-sized and is heavily battered. The other is also a field-chert cobble, but is small and only lightly battered.

Debitage: A total of 1372 pieces of debitage, including 1129 waste flakes and 243 pieces of shatter, was recovered from 14CF1320. The total includes 117 primary, 385 secondary, and 627 blank decortication flakes, and 39 primary, 124 secondary, and 80 blank pieces of shatter. Almost all of the primary and secondary decortication specimens were derived from field chert, but a few pieces of fossiliferous gray chert with white limestone cortex are also present in the inventory. Approximately 58.4 percent of the debitage appears to have been heat treated.

In terms of provenience, the bulk of the debitage came from F29, where 840 pieces were recovered. In addition, 182 pieces of debitage were found in the plow zone above F29. A total of 202 pieces was retrieved from within F5, along with 40 pieces from the plow zone above the pit. The F5 total, however, includes 112 pieces of debitage, and the F29 total 68 pieces, recovered by means of the water flotation process. Most of those are very small flakes which would not have been recovered if the water flotation technique had not been used. Three pieces of debitage were found during excavation of F24, the burned limestone complex, with five more pieces being discovered in the plow zone above it. A total of 100 pieces of debitage was retrieved from the surface of the site. Most of the surface debitage, however, was not collected.

Ground stone: The ground-stone inventory from 14CF1320 consists of sandstone and hematite, most of which is unworked. A total of 26 pieces of sandstone were found. Nineteen pieces were recovered from within F29, and one from the plow zone above the feature. Three pieces were collected from within F5, with three more pieces being recovered from the plow zone above it. The sandstone is a tan-colored, highly micaceous, relatively dense material. The pieces range from fist-sized, usually slab-shaped pieces down to small, irregularly shaped, fingernail-sized fragments. Eight of the larger pieces, five from F29 and three from F5, are worked. The F5 specimens and two of the F29 specimens have been ground flat. The other F29 specimens include two with V-shaped grooves and one with a relatively wide and somewhat concave U-shaped groove.

One fist-sized concentration of hematite flecks and a total of 20 pieces of hematite were found at the site. All twenty pieces are irregular and typically angular in shape, ranging from fingernail size down to very small fragments, some of which are barely pencil-lead thickness. The concentration and two pieces of hematite were found within F29. A total of 17 pieces of hematite was recovered from within F5, with one more piece being found in the plow zone above the feature. Eight of the F5 specimens are very small fragments recovered only by means of the water flotation technique. Three of the larger pieces, two from F5 and one from F29, appear to have been lightly ground along one face, but the rest of the inventory is unmodified.

Faunal remains: The faunal material found at 14CF1320 represents the remains of large and small mammals, fish, reptiles (turtle), and molluscs. Almost all the remains, particularly the identifiable specimens, were recovered from within F5. F29 yielded 13 unidentifiable burned bone fragments, and four unburned sections of bone were found on the surface of the site. One of the surface finds is a section of the zygomatic arch (malar bone) of a medium-sized mammal.

Feature 5 yielded a comparatively large amount of faunal material. Most of the bone, unfortunately, was too small and fragmentary to be meaningfully enumerated or to be identified as to species. The largest of the remains consists of the right scapula of a mature bison. No wear polish or butchering or hafting marks are observable on the specimen, part of which has been burned; however, the acromion and most of the distal portion of the scapula are missing, having been broken away. At least five small pieces of bone, one of which has been burned, are identifiable as sections of the scapula. Several other burned and unburned bone fragments, which appear to be sections of long bones of large mammals, possibly bison, were also found in the feature. Other mammal remains include one well-worn canid incisor, and a few small teeth and bones, primarily long bones and vertebrae, which are attributable to small rodents.

Fish remains were fairly numerous within F5. Identifiable specimens include a maxilla from a fish about the size of a blue gill, several cranial fragments, several vertebrae, and numerous ribs or spines. Unfortunately, neither the species nor the number of fish represented by the remains could be determined.

Turtle remains from the feature consist of one cervical and two caudal vertebrae. No other clearly identifiable turtle remains were found.

The remains of fresh-water mussels, including both shell fragments and unbroken "halves" of mollusc shell, were fairly abundant at 14CF1320, although concentrated almost entirely within F5. F29 produced one small piece of burned shell, but no other molluscan remains were found at the site.

Within the F5 fill, 66 identifiable molluscan specimens were found along with 36 burned and 13 unburned unidentifiable fragments of shell. The collection was analyzed by Dr. A. Byron Leonard of the Kansas Biological Survey. Dr. Leonard identified ten separate genera, and further differentiated most of the shells as to species and subspecies. His analysis identified 19 specimens of the genus Quadrula, including 16 specimens of Q. pustulosa (Lea), two of Q. cylindrica (Say), and one of Q. metanevra (Rafinesque); ten species of the genus Ligumia, all L. recta latissima (Rafinesque); eight specimens of the genus Lampsilis, including four of L. ovata ventricosa (Barnes) and one identified tentatively as L. teres; seven specimens of the genus Pleurobema, including four of P. cordatus catillus (Conrad) and two of P. cordatum pyramidatum (Lea); seven specimens of the genus Crenodonta, all C. peruviana costata (Rafinesque); seven specimens of the genus Eliptio, all E. dilatatus (Rafinesque); four specimens of the

genus Fusconaia, all F. flava (Rafinesque); two specimens of the genus Actinonaias, both A. carinata (Barnes); one specimen of the genus Megalonaia, M. gigantea (Barnes); and one specimen of the genus Tritogonia, T. verrucosa (Barnes).

According to Murray and Leonard (1962), mussels of these types are found in almost all stream habitats except those with shifting sand bottoms. Most occur in medium-sized streams and large rivers at fairly shallow depths (ca. 2-4 ft), but at least one, Megalonaia gigantea, which is also the largest unionid mussel in the Mississippi drainage, is found only in deep water (five ft or more). All the identified species are common to east central and/or southeastern Kansas. None are found in western Kansas, or most of central Kansas, due to the presence of shifting sand bottoms in the drainages of those areas. In passing, it is worth noting that the Neosho river "...has the greatest number and kinds of mussels..." in the state (Murray and Leonard 1962:170). It is obviously quite likely, indeed almost certain, that the 14CFL320 mollusc shells represent mussels collected from the Neosho river within close proximity to the site.

Floral remains: The floral remains from 14CFL320 consist of wood charcoal and charred plant remains. All the remains were collected from below plow zone in the three features. Three charcoal samples, one from each of the features, were sent to Teledyne Isotopes, Inc., of Westwood, New Jersey, for radiocarbon dating. According to James Buckley of the Teledyne Radiocarbon Laboratory, in a letter dated 20 February 1980, the Libby half-life of 5,568 years was used to calculate the ages of the samples, which were treated for the removal of carbonates and humic acids. No correction was made for variation in the atmospheric radiocarbon content.

The burned limestone complex, F24, yielded only one charcoal sample of assay size. This sample was dated by Teledyne as having an age of $1,770 \pm 80$ years, dating the feature at around A.D. 180. Feature 29, interpreted as a trash-filled borrow pit, contained several relatively large charcoal concentrations, enabling the collection of several samples of assay size. The sample sent to Teledyne was taken from a depth of 45-55 cm below surface and yielded a date of 890 ± 80 years, or ca. A.D. 1060. Feature 5, interpreted as a trash-filled storage pit, contained an abundance of charcoal from which several large samples were taken. The sample dated by Teledyne was taken from a depth of 40-45 cm below surface and yielded a date of 990 ± 80 years, or ca. A.D. 960.

The plant remains were covered from F5 and F29 by means of the water flotation process, and were examined by Dr. Ronald L.

McGregor, the director of the Kansas Biological Survey. Dr. McGregor was able to identify two kinds of plant remains, nut shells and Chenopodium seeds.

The material from F5 was identified as the fragmentary remains of a charred nut shell, tentatively identified as walnut, or the genus Juglans. Species determination, or a more positive genus identification, was not possible due to the fragmentary nature of the remains. Seven small fragments were found, representing probably no more than one shell. The fragments were recovered from three different levels of the feature, from 25-35 cm below surface, 40-45 cm below surface, and 50-55 cm below surface.

The material from F29 consisted of two charred seed fragments, one from 45-50 cm below surface and the other from 55-65 cm below surface. They were identified as representatives of the genus Chenopodium, commonly known as lambs-quarter or goosefoot. Species determination was not possible due to the fragmentary nature of the remains. Chenopodium is a seed-bearing plant, a weed commonly found in disturbed soil areas such as recently silted-over bottom-land. It has been found at several prehistoric sites (e.g., Struever 1962, 1968a) and is presumed to have been utilized as a food source. The prevalence of Chenopodium at midwestern archeological sites has led several investigators to conclude that it was relatively important in Archaic and Woodland subsistence systems, and some (e.g., Fowler 1971) have hypothesized that it was cultivated and domesticated by those cultural groups.

Summary and conclusions

14CF1320 is identifiable as representing the remains of an historic Euro-American farmstead and/or dump, and the remains of a prehistoric habitation site. The historic component is sparsely represented and is likely the result of the incidental deposition of artifacts rather than an actual occupation of the site. It is not historically significant. The prehistoric component, on the other hand, is well represented by both artifactual material and cultural features, possibly including structural remains.

The pottery and the diagnostic lithic artifacts, specifically the projectile points and the beveled-knife sections, clearly indicate the prehistoric component to be a manifestation of the Pomona focus of the Middle Ceramic time period. Pottery was particularly abundant at the site, and differs from Wilmeth's definition of Pomona ware (1970:29,33) only in the limited and rather interesting use of shell tempering.

Three significant, intact cultural features were encountered and either wholly or partially excavated during the course of the investigation. These include an extensive burned limestone complex, interpreted as a midden-like deposit, and two trash-filled pits, interpreted as a borrow pit and a storage pit, respectively. Both trash pits contained a limited amount of grass-impressed daub which, along with the presence of a probable borrow pit, indicate the distinct possibility that a daub-covered house once stood on the site. Since no daub concentrations were noticed on the site's surface, it is presumed that the remains of such a house could yet be found at the site, in an undisturbed condition beneath the plow zone.

Due to the preservational qualities of the features, it fortunately proved possible to obtain radiocarbon dates for the site. The trash pits produced two dates which, when their statistical variation is taken into account, range from A.D. 880-1140. The two dates have a 60 year overlap between A.D. 980 and A.D. 1040, with the center of the overlap at A.D. 1010. The latter date is relatively early for Pomona focus, the available radiocarbon dates of which range from A.D. 1000-1600 (Witty 1978:62), but quite in accord with the A.D. 1020 \pm 150 date obtained from the Dead Hickory site, 14CF301, the only other dated Pomona site in John Redmond reservoir (Schmits 1980:161, and Witty 1967:4) and the A.D. 1090 \pm 100 date obtained from the Hart site, 14OS305, the Pomona focus type site in nearby Pomona reservoir (Witty 1967:4).

The other radiocarbon date from the site, A.D. 180 \pm 80, obtained from F24, the burned limestone complex, seems much too early for a Pomona focus occupation. Two explanations are possible: that the charcoal was contaminated in some manner, or that an earlier component, presumably a manifestation of the Greenwood phase, is represented at the site. Unfortunately, contamination can be neither proven nor disproven, although the close proximity of the charcoal sample to the surface suggests the distinct possibility of contamination by leaching. As regards the second explanation, there is little or no clearcut artifactual evidence either within the feature or elsewhere at the site, for a Greenwood phase occupation. The only diagnostic artifact in F29, a cord-roughened and indurated-clay-tempered body sherd, is rather unremarkable but still readily classifiable as Pomona ware. A few of the projectile points from the site, specifically, the corner-notched Scallorn and Ellis-like points, could represent an early occupation, but these point types are also typically found at Pomona focus sites. The association of these points at 14CF1320 with Fresno-like points and an abundance of Pomona ware pottery, in conjunction with a complete absence of limestone-tempered Verdigris ware pottery, would seem to rule out the possibility of a Greenwood phase occupation.

Subsistence activities of the site's occupants appear to have consisted of hunting and gathering. Hunting is obviously indicated by the projectile points, a conclusion corroborated by the presence of a bison scapula and assorted bone fragments. Bison, unidentified small mammals, fish, and turtle appear to have been utilized. Gathering is indicated by the presence of mollusc shells and floral remains. Fresh water mussels, *Chenopodium*, and nuts were apparently utilized. No horticultural evidence was found.

14CF1320 has been adversely affected by cultivation and road construction, but the results of the 1979 investigation indicate that the site has a definite potential for the finding of further undisturbed subsurface remains of a significant nature and can thus be considered to have scientific significance. The burned limestone complex was only partially excavated, and the presence of daub and a probable borrow pit indicates that structural remains and associated features probably exist at the site, although extensive testing will be necessary to locate them. The finding of subsistence evidence, especially floral remains, indicates that the information yet to be recovered may be archeologically significant. In short, the site appears to have a great deal of investigative potential and is quite likely to yield further archeologically significant information.

Site 14CF1321

Site description

Reservoir location: At an elevation of 1065-1075 ft, at the edge of and just above the flood control pool, in the Otter Creek Game Management Area.

Soil type: Kenoma-Olpe complex.

Setting: 14CF1321 is in the uplands above the left bank of Otter creek. The site covers an area approximately 100 X 100 m in size on the crest and upper slopes of a high upland knoll, the end of a high upland ridge which extends out from even higher uplands located 1000-1600 m to the west. To the east, the knoll slopes rapidly down to a lower lying continuation of the ridge which proceeds east for some distance, forming a relatively narrow divide between the Otter creek and Buffalo creek drainages. With Otter creek located 300-400 m to the southeast and Buffalo creek about 700 m to the north, the site is an excellent vantage point from which to view the area. One fairly large and well-represented prehistoric site, 14CF314, lies at the base of the slopes leading down from 14CF1321, approximately 200-300 m to the east and southeast.

Present conditions: The site is under cultivation in the northern portion of the site, and is covered by a thick growth of grass in the southern. The distinctively colored upland subsoil, which in

this case contains a large amount of field chert of various sizes and shapes, was in evidence over almost all the surface of the cultivated portion of the site, indicating that most if not all of the site's primary archeological context has been destroyed.

Investigations

The site was visited once during the summer. The investigation consisted of pedestrian survey and the collecting of exposed archeological materials from the surface.

Archeological materials

The archeological materials encountered at 14CF1321 consisted of a few prehistoric lithic artifacts, and one bone fragment. Field chert of various sizes, ranging from small pebbles to large cobbles, was abundant at the site, and some of the cobbles may be hammerstones or cores. All recognizable artifacts and the bone fragment were collected.

Lithic artifacts: The lithic artifact inventory consists of chipped stone and includes one thin biface fragment and five pieces ofdebitage. The biface fragment is made of finely textured gray chert. It exhibits only one unbroken edge, which has been carefully retouched. The artifact is 7 mm thick. The debitage consists of two secondary and two blank decortication waste flakes, and one primary piece of shatter. The primary and secondary specimens were derived from field chert cobbles. The shatter and one flake appear to have been heat treated.

Faunal remains: One small, very weathered, unburned, and unidentifiable bone fragment was found. It is assumed to be recent in age.

Summary and conclusions

14CF1321 is identifiable as representing the remains of a prehistoric camp site of indeterminate age and cultural affiliation. No structural remains or evidence of any other cultural features were encountered at the site. The site is sparsely represented and may have resulted from intermittent use by the occupants of nearby site 14CF314.

The site has been adversely affected by cultivation which has exposed the upland subsoil across almost all of the surface, indicating that most if not all of the site's primary archeological context has been destroyed. Judging as well from the paucity of the remains, the site apparently has little or no archeological potential and is unlikely to yield any further archeologically significant information. It thus appears to lack scientific significance.

Site 14LY321

Site description

Reservoir location: At an elevation of 1065-1075 ft, at the edge of and above the flood control pool, in the Flint Hills National Wildlife Refuge.

Soil type: Dennis silt loam.

Setting: 14LY321 is in the uplands above the left bank of Eagle creek and the left bank of a minor forested drainage. The site covers an area approximately 100 X 100 m in size on the southwest end of a broad, three-pronged upland ridge which extends out from higher uplands located 800-1000 m to the north. The minor drainage lies to the west of the site, and has fairly steep slopes leading down to it. To the south, the ridge slopes more gently down to Eagle creek, located 100-200 m away. An east-west-trending gravel road marks the northern boundary of the site.

Present conditions: The site is in a cultivated field. It is receiving adverse impact from cultivation, which has exposed the distinctively colored upland subsoil along the upper slopes of the ridge, indicating that most if not all of the site's primary archeological context has been destroyed.

Investigations

The site was visited twice during the summer. The investigation consisted of pedestrian survey and the collecting of exposed archeological materials from the surface.

Archeological materials

The archeological materials encountered at 14LY321 consisted of historic and prehistoric artifacts, and a few scattered chunks of burned limestone. The historic material consisted of very small, nondiagnostic pieces of glass, which were left at the site. All prehistoric artifacts were collected.

Prehistoric artifacts: The prehistoric artifact inventory consists of chipped stone and includes two biface fragments, one core, anddebitage.

One biface is a large, thick, crudely flaked specimen of coarsely textured, white and gray fossiliferous chert. It is elongated and subtriangular in shape, and broken at both ends. The artifact is 11 mm thick, has a maximum width of 26 mm, and is presently 48 mm long. The other biface fragment bears the notch section of a notched projectile point, but very little

else can be said regarding the morphology of the original artifact. Made of heat-treated, pinkish white chert, the specimen is 7 mm thick.

One core was collected from the site. It is a small, irregularly shaped specimen of fossiliferous gray chert with white limestone cortex.

A total of nine pieces ofdebitage, including six waste flakes and three pieces of shatter, were collected. The total includes one primary, one secondary, and four blank decortication flakes, and one primary, one secondary, and one blank pieces of shatter. All primary and secondary decortication specimens were derived from field chert. Four of thedebitage appear to have been heat treated.

Summary and conclusions

14LY321 is identifiable as representing the remains of an historic Euro-American farmstead and/or dump, and the remains of a prehistoric camp site of indeterminate age and cultural affiliation. No structural remains were encountered on the surface of the site, but prehistoric hearths are undoubtedly represented by the scattered chunks of burned limestone. The historic component is sparsely represented, and probably results from the incidental deposition of debris from a nearby farmhouse rather than from an actual occupation. It is not historically significant.

The site has been adversely affected by cultivation. Judging from the amount of subsoil brought to the surface, most if not all of the site's primary archeological context has been destroyed. The site apparently has to have little or no investigative potential and is unlikely to yield any further archeologically significant information. It thus appears to lack scientific significance.

Site 14LY322

Site description

Reservoir location: At an elevation of 1060 ft, in the flood control pool, in the Flint Hills National Wildlife Refuge.

Soil type: Mapped as Ivan and Kennebec silt loams; more likely represents an upland soil such as Dennis silt loam.

Setting: 14LY322 is on a low-lying knoll on the immediate left bank of Eagle creek. The site is mapped as representing a bottomland soil, but the presence of orangish colored subsoil exposed along the upper slopes of the knoll strongly suggests that it is an upland remnant. The site covers an area approxi-

mately 75 X 100 m in size. It is bordered on the west by Eagle creek and on the south by lower-lying bottomland. A minor, tree-lined drainage lies along the northern edge of the site. A shallow slough or drainage is located to the east, separating the site from an upland ridge which stretches away to the southeast and on which the Gilligan site, 14CF322, one of the type sites for the Plains Woodland Greenwood phase, is located.

Present conditions: The site is in a cultivated field. A small grove of trees is present in the east central portion of the site. Cultivation of the area has brought the distinctively colored upland subsoil to the surface along the upper slopes on the southern edge of the site, indicating that at least part of the site's primary archeological context has been destroyed.

Investigations

The site was visited once during the summer. The investigation consisted of pedestrian survey and the collecting of exposed archeological materials from the surface.

Archeological materials

The archeological materials encountered at 14LY322 consisted of prehistoric ceramic and lithic artifacts, a small amount of burned earth and faunal material, and scattered chunks of burned limestone and red sandstone.

Ceramic artifacts: One small, heavily weathered, indurated-clay-tempered body sherd was found at the site, along with one piece of burned earth. The surface textures of the sherd are fine and the core is laminated. The exterior surface color is orange and the interior is gray; the core is also gray. The surface treatment consists of a cord-roughened exterior and a plain interior. The exact nature of the cord impressions was not apparent due to erosion. No decoration is present on the sherd. Morphologically, the sherd measures 6.5 mm thick but is otherwise uninformative.

One small burned earth fragment was also found at the site. It is tan colored, fine textured, and apparently untempered. No grass or pole impressions are visible on the relatively smooth-surfaced lump.

Lithic artifacts: The lithic artifacts consist of chipped stone and include one retouched flake scraper fragment and debitage.

The retouched flake scraper fragment consists of the bit section of the tool. Made of mottled tan chert, the 7 mm thick flake has a 31 mm wide, fan-shaped bit exhibiting steep but rather minimal retouch. On one lateral edge, below the bit, the flake

has been retouched on its ventral face, creating a fairly sharp protuberance or spur. The opposite edge, however, is unworked.

Nine pieces of debitage, including seven waste flakes and two pieces of shatter, were collected from the site. The total includes one secondary and six blank decortication flakes, and one primary and one secondary pieces of shatter. All secondary and primary decortication specimens were derived from field chert. Three of the total, 33 percent, appear to have been heat treated.

Faunal material: One very eroded bone fragment was collected. It is unburned, and apparently from the long bone of a large animal.

Summary and conclusions

14LY322 is identifiable as representing the remains of a prehistoric camp site attributable, on the basis of limited but relatively diagnostic ceramic evidence, to the Pomona focus of the Middle Ceramic period. No structural remains were found, but one or more hearths are likely represented by the burned limestone and the burned earth fragment.

The site has been adversely affected by cultivation, which has brought the upland subsoil to the surface along the slopes of the knoll. The subsoil is of limited extent, however. Judging as well from the low-lying nature of the knoll, it is possible that buried remains still exist at the site in primary archeological context. Testing will be necessary for a determination of the site's scientific significance.

Site 14LY323

Site description

Reservoir location: At an elevation of 1065 ft, in the flood control pool, in the Flint Hills National Wildlife Refuge.

Soil type: Reading silt loam.

Setting: 14LY323 is in the bottomland on the left bank of the Neosho river. It is situated on a long, narrow, alluvial terrace formation located a short distance above the confluence of the river and Plum creek, in an area marked by several old meander scars. Three other sites, 14LY324, 14LY325, and 14LY326, are also in the same general area.

Present conditions: The site is in a cultivated field and is being adversely affected by cultivation and occasional flooding.

Investigations

The site was visited once during the summer. The investigation consisted of pedestrian survey and the collecting of exposed archeological materials from the surface. The work was carried out by Kansas Archeological Training Program enrollees directed by a Society archeologist.

Archeological materials

The archeological materials encountered at 14LY323 consisted of prehistoric ceramic and lithic artifacts, faunal remains, burned earth fragments and/or daub, and a few scattered chunks of burned limestone. All ceramics and lithic tools were collected, along with a representative sample of the lithic debitage, faunal remains, and burned earth.

Ceramic artifacts: Nine body sherds were found, along with two pieces of burned earth and/or daub. Almost all the sherds were very eroded and oxidized. The majority are tempered with indurated clay, but one is bone tempered. The latter and most of the others exhibit cord-roughened exteriors and plain, scraped or wiped interiors. Several sherds, however, are so weathered and spalled that the surface treatment could not be determined. The bone-tempered sherd exhibits cord impressions produced by the use of medium-gauge S-twist cord. The only other sherd with cord roughening distinct enough to be analyzed displays fine to medium-gauge Z-twist cord impressions. None of the sherds are decorated, nor are any of them morphologically informative.

Along with the pottery, two small, tan-colored, irregularly shaped burned earth and/or daub fragments were collected. Grass impressions are visible on the surface of one of the fragments.

Lithic artifacts: The lithic artifact inventory consists of chipped stone and includes one endscraper, one core, six pieces of debitage, and one hammerstone. None of the material is culturally diagnostic.

Faunal remains: Two small, unidentifiable pieces of bone were found. Both are unburned and may be recent in age.

Summary and conclusions

14LY323 is identifiable as representing the remains of a prehistoric camp site attributable, on the basis of ceramic evidence, to the Pomona focus of the Middle Ceramic time period. Sparse evidence of hearths were found at the site, in the form of burned limestone. Structural remains may be represented by the grass-impressed piece of burned earth although it may just as likely be

a burned earth fragment associated with the hearth. Judging from the sparseness of the evidence, the latter interpretation seems more likely.

The site has been adversely affected by cultivation, but due to its bottomland location, buried remains may be present. Testing will be necessary for a determination of the site's scientific significance.

Site 14LY324

Site description

Reservoir location: At an elevation of 1065 ft, in the flood control pool, in the Flint Hills National Wildlife Refuge.

Soil type: Reading silt loam.

Setting: 14LY324 is in the bottomland on the left bank of the Neosho river. The site covers an area approximately 35 X 25 m in size on the western edge of a long, narrow, alluvial terrace formation located a short distance above the confluence of the river and Plum creek, in an area marked by several old meander scars. Three other sites, 14LY323, 14LY325, and 14LY326, are also in the same general area.

Present conditions: The site is in a cultivated field and is receiving adverse impact from the effects of cultivation and occasional flooding.

Investigations

The site was visited once during the summer. The investigation consisted of pedestrian survey and the collecting of exposed archeological materials from the surface. The work was carried out by Kansas Archeological Training Program enrollees directed by a Society archeologist.

Archeological materials

The archeological materials encountered at 14LY324 consisted of historic and prehistoric artifacts, one small unidentifiable and unburned bone fragment, and two small chunks of burned limestone. The prehistoric artifacts consisted of lithic debitage, none of which was culturally diagnostic. A representative sample of the artifacts was collected, along with the bone fragment.

Historic artifacts: One undecorated whiteware body sherd was collected.

Prehistoric artifacts: Seven pieces of chipped-stone debitage were collected.

Summary and conclusions

14LY324 is identifiable as representing the remains of an historic Euro-American farmstead and/or dump, and the remains of a prehistoric camp site of indeterminate age and cultural affiliation. The historic component is sparsely represented and likely derives from the incidental deposition of artifacts rather than an actual occupation. It is not historically significant. No historic or prehistoric structural remains were found, but sparse evidence of hearths, in the form of two small chunks of burned limestone, was encountered at the site.

The site has been adversely affected by cultivation, but due to its bottomland location, buried remains may be present. Testing will be necessary for a determination of the site's scientific significance.

Site 14LY325

Site description

Reservoir location: At an elevation of 1065 ft, in the flood control pool, in the Flint Hills National Wildlife Refuge.

Soil type: Reading silt loam.

Setting: 14LY325 is in the bottomland on the left bank of the Neosho river. The site covers an area approximately 50 X 50 m in size on the end and western slope of a long, narrow, alluvial terrace formation located a short distance above the confluence of the river and Plum creek, in an area marked by several old meander scars. Three other sites, 14LY323, 14LY324, and 14LY326, are also in the same general area.

Present conditions: The site is in a cultivated field and is receiving adverse impact from the effects of cultivation and occasional flooding.

Investigations

The site was visited once during the summer. The investigation consisted of pedestrian survey and the collecting of exposed archeological materials from the surface. The work was carried out by Kansas Archeological Training Program enrollees directed by a Society archeologist.

Archeological materials

The archeological materials encountered at 14LY325 consisted of historic and prehistoric artifacts. All prehistoric tools were

collected, along with a representative sample of the debitage and the historic material.

Historic artifacts: One rusty square nail and one coal "clinker" were collected.

Prehistoric artifacts: The prehistoric artifact inventory consists of chipped stone and includes one projectile point, one knife, one large chopper, two retouched flakes, three utilized flakes, and 24 pieces of debitage. The knife, chopper, and all primary and secondary pieces of debitage display field chert cortex.

The only culturally diagnostic artifact is the projectile point. It is a small, corner-notched, expanding-stemmed specimen typologically identifiable as a representative of the Scallorn projectile point type (c.f. Bell 1960:84). The tip is missing from the artifact, but the extant portion of the point has a shoulder width of 10 mm, a stem width of 5.5 mm, a basal width of 9 mm, and a stem length of 4.5 mm.

Summary and conclusions

14LY325 is identifiable as representing the remains of an historic Euro-American farmstead and/or dump, and the remains of a prehistoric camp site attributable, on the basis of limited lithic evidence, to one of the Early Ceramic or Middle Ceramic cultural complexes. No structural remains or evidence of any other cultural features were encountered at the site. The historic component is sparsely represented, and is probably the result of chance deposition of artifacts rather than an actual historic occupation. It is not historically significant.

The site has been adversely affected by cultivation, but due to its bottomland location, buried remains may be present. Testing will be necessary for a determination of the site's scientific significance.

Site 14LY326

Site description

Reservoir location: At an elevation of 1065 ft, in the flood control pool, in the Flint Hills National Wildlife Refuge.

Soil type: Reading silt loam.

Setting: 14LY326 is in the bottomland on the immediate left bank of the Neosho river. The site covers an area approximately

50 X 50 m in size on a long, narrow, alluvial terrace formation located a short distance above the confluence of the river and Plum creek, in an area marked by several old meander scars. The river borders the site on the west and an old meander scar lies to the east. Several other sites, 14LY323, 14LY324, and 14LY325, are also located in the same general area.

Present conditions: The site is in a cultivated field and is receiving adverse impact from the effects of cultivation and occasional flooding.

Investigations

The site was visited once during the summer. The investigation consisted of pedestrian survey and the collecting of exposed archeological materials from the surface. The work was carried out by Kansas Archeological Training Program enrollees directed by a Society archeologist.

Archeological materials

The archeological materials encountered at 14LY326 consisted of prehistoric ceramic and lithic artifacts, and one small, unburned mollusc-shell fragment. The shell, all ceramic artifacts and lithic tools, and a representative sample of the lithic debitage were collected.

Ceramic artifacts: Seven cord-roughened, indurated-clay-tempered body sherds were collected. All are somewhat eroded and oxidized. The cord roughening was produced by the use of fine to medium-gauge cord, discernible in three separate instances as having an S-twist. On one of those three sherds, the impressions suggest that an open-mesh fabric of undetermined construction was used. None of the sherds are decorated, and none are morphologically informative.

Lithic artifacts: The lithic artifact inventory consists of chipped stone and includes a thin biface, a retouched flake, four small cores, and 12 pieces of debitage. The biface, cores, and all primary and secondary decortication pieces of debitage were derived from field chert.

The biface is a small, triangular, lightly worked piece, apparently a projectile point preform. It is 30 mm long, 23 mm wide, at the base, and 7 mm thick.

Summary and conclusions

14LY326 is identifiable as representing the remains of a prehistoric camp site attributable, primarily on the basis of

scanty but relatively diagnostic ceramic evidence, to the Pomona focus of the Middle Ceramic time period. No structural remains or evidence of any other cultural features were encountered at the site.

The site has been adversely affected by cultivation, but due to its bottomland location, buried remains may be present. Testing will be necessary for a determination of the site's archeological significance.

Site 14LY327

Site description

Reservoir location: At an elevation of 1065 ft, in the flood control pool. The western portion of the site is within the boundaries of the Flint Hills National Wildlife Refuge. The eastern portion is on privately owned land.

Soil type: Reading silt loam.

Setting: 14LY327 is in the bottomland on the immediate left bank of the Neosho river. The site covers an area approximately 50 X 50 m in size on the western edge of a broad, low-lying, alluvial terrace formation, bordered on the west by the river. A prominent upland ridge, on which site 14LY328 is situated, is located 250-350 m to the north-northwest.

Present conditions: The site is in a cultivated field and is receiving adverse impact from the effects of cultivation and occasional flooding.

Investigations

The site was visited once during the summer. The investigation consisted of pedestrian survey and the collecting of exposed archeological materials from the surface. The work was carried out by Kansas Archeological Training Program enrollees directed by a Society archeologist.

Archeological materials

The archeological materials encountered at 14LY327 consisted of prehistoric ceramic and lithic artifacts, faunal remains, and a few small pieces of burned limestone. All ceramic artifacts and lithic tools, faunal remains, and a representative sample of the lithicdebitage were collected.

Ceramic artifacts: Two small, eroded and oxidized body sherds were found. Both have cord-roughened exteriors, but on one sherd the cord roughening has been partially smoothed over. Both sherds are at least partially tempered with indurated clay, but also display "cell" tempering as well, suggesting the possibility of leached-out limestone or shell tempering. The cores of both sherds are contorted and somewhat "chunky." Neither sherd is decorated, nor are they morphologically informative.

Lithic artifacts: The lithic artifact inventory includes both chipped stone and ground stone. The chipped stone includes two small, crudely flaked bifaces, one small chopper, three unifacially utilized flakes, one core, one hammerstone, and 18 pieces of debitage. Almost all the primary and secondary decortication specimens, including the core and the chopper, were derived from field chert. The hammerstone, however, is a small, river-rolled, pinkish white colored, quartz cobble. The ground stone category consists of one small sandstone abrader fragment. None of the lithic artifacts are culturally diagnostic.

Faunal remains: One bone fragment and one tooth fragment were found. Both are unburned and may be recent in age. The bone fragment is unidentifiable but the tooth fragment is from a large animal such as a bison, elk, or deer.

Summary and conclusions

14LY327 is identifiable as representing the remains of a prehistoric camp site attributable to one of the Early Ceramic or Middle Ceramic cultural complexes. The possibility of limestone tempering and the partially smoothed-over cord-roughened exterior surface treatment of the ceramics suggests that the Plains Woodland Greenwood phase of the Early Ceramic time period may be represented, but this interpretation cannot be demonstrated with certainty from the limited evidence at hand. No structural remains were encountered at the site, but sparse evidence of hearths was found, in the form of a few small pieces of burned limestone.

The site has been adversely affected by cultivation, but due to its bottomland location, buried remains may be present. Testing will therefore be necessary for a determination of the site's scientific significance.

Site 14LY332

Site description

Reservoir location: At an elevation of 1065-1070 ft, at the edge of and above the flood control pool, in the Flint Hills National Wildlife Refuge.

Soil type: Summit silty clay loam.

Setting: 14LY332 is in the uplands above the right bank of the Neosho river. The site covers an area approximately 200 X 100 m in size on the end of a wide, northerly pointing upland ridge. Bottomland and the river lie to the north. Another prehistoric site, 14LY333, is located on an adjacent ridge 400 m to the east.

Present conditions: The site is in a cultivated field and is receiving adverse impact from the effects of cultivation, which has brought the distinctively colored upland subsoil to the surface along the upper slopes of the ridge.

Investigations

The site was visited twice during the summer. The investigation consisted of pedestrian survey and the collecting of exposed archeological materials from the surface. The site was located and designated by a Society archeologist accompanied by Kansas Archeological Training Program enrollees, and was also visited by the writer and the regular crew.

Archeological materials

The archeological materials encountered at 14LY332 consisted of historic and prehistoric artifacts, and faunal and molluscan remains. All prehistoric lithic tools were collected, along with a representative sample of the lithic debitage, historic material, and faunal remains.

Historic artifacts: The historic artifact inventory consists of three stoneware sherds, three whiteware sherds, and two glass fragments, one of the latter being the rim and neck section of a cork-type bottle.

Prehistoric artifacts: The prehistoric artifact inventory consists entirely of chipped stone and includes two small cores, three waste flakes, and one relatively large, thick, rectangular, crudely flaked biface which may be a celt preform, a chopper, or a small hoe. None of the material is culturally diagnostic.

Faunal remains: One long bone fragment from a large animal, and one complete bone, identifiable as a first phalanx of a bison or cow, were found at the site. Both specimens are unburned and heavily weathered, and are presumed to be recent in age.

Summary and conclusions

14LY332 is identifiable as representing the remains of an historic Euro-American farmstead and/or dump, and the remains of

a prehistoric camp site of indeterminate age and cultural affiliation. No structural remains or evidence of any other cultural features were found at the site. The historic component is sparsely represented and likely derives from the chance deposition of artifacts rather than an actual occupation. It is not historically significant.

The site has been adversely affected by cultivation. Judging from the surficial presence of the upland subsoil along the upper slopes of the ridge, much of the site's primary archeological context has been destroyed. The crest of the ridge did not exhibit the subsoil, however, and it is possible that buried remains could be present in this area. Testing will therefore be necessary for a determination of the site's scientific significance.

Site 14LY333

Site description

Reservoir location: At an elevation of 1065-1070 ft, at the edge of and above the flood control pool, in the Flint Hills National Wildlife Refuge.

Soil type: Summit silty clay loam.

Setting: 14LY333 is in the uplands above the right bank of the Neosho river. The site covers an area approximately 250 X 100 m in size on the end of wide northerly pointing upland ridge. A narrow strip of bottomland, and the river, lie to the immediate north. Another prehistoric site, 14LY332, is located on an adjacent ridge about 400 m to the west.

Present conditions: The site is in a cultivated field and is receiving adverse impact from the effects of cultivation, which has brought the distinctively colored upland subsoil to the surface along the upper slopes of the ridge.

Investigations

The site was visited twice during the summer. The investigation consisted of pedestrian survey and the collecting of exposed archeological materials from the surface. The site was located and designated by a Society archeologist accompanied by Kansas Archeological Training Program enrollees, and was also visited by the writer and the regular crew.

Archeological materials

The archeological materials encountered at 14LY333 consisted of historic and prehistoric artifacts, faunal remains, burned earth, and burned and unburned limestone. All prehistoric ceramics and lithic tools and all faunal and molluscan remains were collected, along with a representative sample of the lithic debitage and the historic material.

Historic artifacts: The historic artifact inventory consists of one very rusty caulked muleshoe, one stoneware basal sherd, one small porcelain fragment, one glass fragment bearing a molded "INDIANA" inscription, and one brick fragment.

Prehistoric artifacts: The prehistoric artifact inventory consists of one pottery sherd and an abundance of lithic artifacts, the latter including one ground-stone artifact as well as numerous chipped-stone tools and debitage.

Ceramic artifacts: One undecorated, orangish tan colored, cord-roughened, indurated-clay-tempered body sherd was found. It is somewhat eroded and oxidized. The cord roughening was produced by the use of medium to large-gauge S-twist cord. The sherd is 8.5 mm thick but is otherwise uninformative concerning vessel morphology.

Lithic artifacts: The lithic artifact inventory consists of nine chipped-stone projectile points, one alternately beveled knife fragment, eight thin bifaces and three thick bifaces, three choppers, two endscrapers and two endscraper fragments, three retouched flakes, three utilized flakes, seven small and medium-sized cores, 57 pieces of debitage, one hammerstone, and one ground-stone artifact, a sandstone muller.

None of the projectile points are complete, but at least two distinct kinds of points are present. Two examples of small, thin, plain, triangular points were found, along with seven medium to large-sized notched points. The two small specimens are typologically identifiable as examples of the Fresno and/or Madison projectile point types (c.f. Bell 1960:44, and Perino 1968:52, respectively). Of the seven notched points, two lack their stems and hence cannot be ascribed with certainty to any particular point type. The remaining five are all fairly wide-bladed, ovately triangular specimens with wide, fairly short, moderate to rapidly expanding stems formed by corner notching in four instances and by side notching in one instance. Bases are subconvex. Typologically, such point types as Ensor (c.f. Bell 1960:34), Ellis (c.f. Bell 1960:32), and Marcos (c.f. Bell 1958:42) appear to be represented.

The midsection of an alternately beveled knife was also found. There is no indication that the artifact was diamond shaped, but the extant portion is decidedly broad, about 46 mm wide.

Of the remaining artifacts, none appear to be culturally or temporally diagnostic. The bifaces include two midsections and four tip sections, probably from projectile points or knives; one long, crudely flaked biface, perhaps classifiable as a knife, with a short stem formed by corner notching on only one side of the base; three large, thick, relatively crudely flaked, ovately rectangular bifaces, possibly knives, all broken on one end; and one wide but uninformative midsection.

The two endscrapers and two endscraper fragments are all fairly large in size. The smallest of the four, one of the two complete specimens, is only 37 mm long and 26 mm wide, but is keeled and 15 mm thick. The other complete endscraper is 76 mm long, 31 mm wide, and 13 mm thick. The two fragments are both from apparently large-sized endscrapers.

The remaining chipped-stone material, including the debitage, is made up largely of primary and secondary decortication specimens derived from field chert. A few examples of limestone cortex were also noted. Much of the material is fossiliferous gray chert. About half of the remainder appears to have been heat treated.

The single ground-stone artifact, a large, oblong piece of friable, light brown sandstone, is classifiable, although somewhat tentatively, as a muller, or hand grinding stone. It has been badly marred by plowscars, but appears to have one flat, ground face.

Faunal remains: One large bone fragment, from the long bone of a large animal, was found. It is unburned and very eroded, and is presumed to be recent in age.

Five mollusc-shell fragments were also found. All are eroded and unburned, and presumed to be recent in age.

Summary and conclusions

14LY333 is identifiable as representing the remains of an historic Euro-American farmstead and/or dump, and the remains of a prehistoric camp site attributable, on the basis of relatively diagnostic ceramic and lithic evidence, to the Pomona focus of the Middle Ceramic period. The predominance of large, expanding-stemmed projectile points, however, suggests the possibility that an earlier Plains Woodland component is also present. No structural remains were encountered at the site, but relatively abundant

evidence of hearths, in the form of scattered chunks of burned limestone, was found. The historic component is sparsely represented and is not historically significant.

The site has been adversely affected by cultivation, which has brought the distinctively colored upland subsoil to the surface along the upper slopes of the ridge, indicating that at least part of the site's primary archeological context has been destroyed. The subsoil was not present, however, or at least not observable, on the crest of the ridge, suggesting that buried remains may exist in that area. Testing will therefore be necessary for a determination of the site's scientific significance.

Site 14LY334

Site description

Reservoir location: At an elevation of 1065-1070 ft, at the edge of and above the flood control pool, in the Flint Hills National Wildlife Refuge.

Soil type: Kenoma silt loam in western portion and Summit silty clay loam in the western.

Setting: 14LY334 is in the uplands above the right bank of the Neosho river. The site covers an area approximately 300 X 200 m in size on the western edge of a prominent, northerly pointing upland ridge. The north end of the ridge is on the immediate right bank of the river. Bottomland, and the river, lie to the west of the site.

Present conditions: The site is in a cultivated field and is receiving adverse impact from the effects of cultivation, which has brought the distinctively colored upland subsoil to the surface along the upper slopes of the ridge, indicating that at least part of the site's primary archeological context has been destroyed.

Investigations

The site was visited twice during the summer. The investigation consisted of pedestrian survey and the collecting of exposed archeological materials from the surface. The work was carried out by Kansas Archeological Training Program enrollees directed by a Society archeologist.

Archeological materials

The archeological materials encountered at 14LY334 consisted of historic and prehistoric artifacts, faunal remains, one piece of daub or burned earth, and several scattered chunks of burned and unburned limestone. The daub and all prehistoric ceramics

and lithic tools were collected, along with a representative sample of the lithicdebitage, historic material, and faunal remains.

Historic artifacts: The historic artifact inventory consists of one undecorated whiteware rim sherd, one small lead ball, possibly a weight of some kind, and one small piece of coal.

Prehistoric artifacts: The prehistoric artifact inventory consists of ceramic artifacts, a variety of lithic tools, and chipped-stone debitage.

Ceramic artifacts: A total of 14 body sherds were found at the site. Almost all are small, eroded, and oxidized; several are so weathered as to be virtually uninformative. The majority are indurated-clay-tempered, but one sherd is tempered with crushed burned and unburned bone. The less eroded specimens have cord-roughened exteriors and plain interiors, but there is at least one example of a plain, smoothed exterior. The cord used in producing the cord-roughening was fine to medium gauge in size, and in two instances could be determined to have an S-twist. None of the sherds are decorated, and none are morphologically informative.

One small, tan and gray-colored, irregularly shaped, rough-surfaced, untempered piece of daub or burned earth was also found. It is somewhat eroded, but appears to have grass impressions on one of its faces.

Lithic artifacts: The lithic artifact inventory consists of chipped stone and includes three projectile points, the midsection of a drill, one endscraper, four rather crudely flaked thin bifaces, and six crudely flaked thick bifaces, three retouched flakes, one utilized flake, four field-chert cores, one field-chert hammer-stone, and numerous pieces of debitage, primarily derived from field chert.

Three different kinds of points are present: a small, thin, plain, triangular point; a medium-sized, rounded-tip, short, rectangular-stemmed point, crudely flaked and possibly a preform; and one large, side-notched, relatively short-stemmed point. Typologically, the former is identifiable as a representative of the Fresno projectile point type (c.f. Bell 1960:44). The stemmed point appears to be a crude example of or a preform for a point of the Gary type (c.f. Bell 1958:28). The side-notched specimen shares many of the characteristics of the Gibson type (c.f. Perino 1968: 24).

Faunal remains: One small unidentifiable bone fragment and four mollusc shell fragments were found. All are eroded and unburned, and are presumed to be recent in age.

Summary and conclusions

14LY334 is identifiable as representing the remains of an historic Euro-American farmstead and/or dump, and the remains of a prehistoric camp site attributable, on the basis of ceramic and lithic evidence, to the Pomona focus of the Middle Ceramic period. An Early Ceramic component may also be represented, but with less certainty, by the large side-notched projectile point. The historic component at the site is sparsely represented, and probably derives from the chance deposition of artifacts rather than an actual occupation. It is not historically significant. No definite structural remains were encountered at the site, although one possible piece of daub was found. Evidence of hearths was encountered, in the form of scattered chunks of burned limestone.

The site has been adversely affected by cultivation, which has brought the upland subsoil along the upper slopes of the ridge, indicating that at least part of the site's primary archaeological context has been destroyed. The subsoil was not present, however, or at least observed, on the crest of the ridge, suggesting that buried remains may exist in that area. Testing will therefore be necessary for a determination of the site's scientific significance.

Site 14LY335

Site description

Reservoir location: At an elevation of 1060 ft, in the flood control pool, in the Flint Hills National Wildlife Refuge.

Soil type: Chase silty clay loam.

Setting: 14LY335 is in the bottomland on the right bank of the Neosho river. The site covers an area approximately 100 X 75 m in size on a low-lying alluvial ridge on the immediate right bank of a minor tree-lined drainage which empties into the river 700-800 m to the east.

Present conditions: The site is in a cultivated field and is receiving adverse impact from the effects of cultivation and occasional flooding.

Investigations

The site was visited twice during the summer. The investigation consisted of pedestrian survey and the collecting of

exposed archeological materials from the surface. The work was carried out by Kansas Archeological Training Program enrollees directed by a Society archeologist.

Archeological materials

The archeological materials encountered at 14LY335 consisted of chipped stone and included one projectile point fragment, with a square base and parallel sides, one endscraper, and one large chert chopper. These artifacts were all collected from the site, and catalogued in the laboratory, but have since become lost or mislaid and were unavailable for final analysis.

Only the projectile point fragment could be considered as temporo-culturally diagnostic. From the description in the field notes and laboratory accession list, this artifact was likely one of two things, the basal section of a small, plain, triangular point of the Fresno projectile point type (c.f. Bell 1960:44), or the stem section of a stemmed point, possibly a variant of the Gary point type (c.f. Bell 1958:28).

Summary and conclusions

14LY335 is identifiable as representing the remains of a prehistoric camp site attributable to one of the Ceramic cultural complexes. The site is sparsely represented, with no evidence of structural remains or any other cultural features.

The site has been adversely affected by cultivation, but due to its bottomland location, buried remains may be present. Testing will therefore be necessary for a determination of the site's archeological significance.

Site 14LY338

Site description

Reservoir location: At an elevation of 1065 ft, in the flood control pool, in the Flint Hills National Wildlife Refuge.

Soil type: Reading silt loam.

Setting: 14LY338 is in the bottomland on the immediate right bank of the Neosho river and a minor tree-lined drainage, just above the confluence of the two stream courses. The site covers an area approximately 300 X 100 m in size on a prominent, north-south-trending alluvial terrace. It is bordered on the east by the river and on the north and northeast by the minor drainage. Lower-lying land lies to the west and south.

Present conditions: The site is in a cultivated field and is receiving adverse impact from the effects of cultivation and occasional flooding.

Investigations

The site was visited twice during the season. The investigation consisted of pedestrian survey and the collecting of exposed archeological materials from the surface. The site was located and designated by a Society archeologist accompanied by Kansas Archeological Training Program enrollees, and was also visited by the writer and the regular crew.

Archeological materials

The archeological materials encountered at 14LY338 consisted of historic and prehistoric artifacts, faunal remains, and a few small chunks of burned limestone. All prehistoric lithic tools were collected, along with a representative sample of the lithic debitage, historic material, and faunal remains.

Historic artifacts: Two stoneware body sherds, two earthenware body sherds, and one whiteware body sherd and one rim sherd were collected from the site.

Prehistoric artifacts: The prehistoric artifact inventory is comprised of chipped stone and ground stone. The chipped stone includes two crudely flaked thick biface fragments, one of which is alternately beveled but rather amorphously shaped; one end-scraper fragment; one long, narrow uniface with several unifacially produced concavities along one of its edges; one retouched flake; two unifacially utilized flakes; and 19 pieces of debitage, all but one made of fossiliferous gray chert. The single ground-stone specimen is a small, broken, flat piece of hematite which exhibits slight grinding striations on one of its faces. None of the lithic material is culturally diagnostic.

Faunal remains: Three bone fragments and two tooth fragments were collected. None are identifiable. Two of the bone fragments are burned.

Summary and conclusions

14LY338 is identifiable as representing the remains of an historic Euro-American farmstead and/or dump, and the remains of a prehistoric camp site of indeterminate age and cultural affiliation. The historic component is sparsely represented, and is probably the result of the chance deposition of artifacts rather than an actual historic occupation. It is not historically

significant. No historic or prehistoric structural remains were encountered, but sparse evidence of hearths was found in the form of a few scattered chunks of burned limestone.

The site has been adversely affected by cultivation, but due to its bottomland location, buried remains may be present. Testing will therefore be necessary for a determination of the site's scientific significance.

Site 14LY339

Site description

Reservoir location: At an elevation of 1065 ft, in the flood control pool, in the Flint Hills National Wildlife Refuge.

Soil type: Reading silt loam.

Setting: 14LY339 is in the bottomland on the immediate right bank of the Neosho river. The site covers an area approximately 100 X 75 m in size on a low-lying, ill-defined alluvial terrace formation, with the river passing along the immediate north edge of the site. A north-south-trending gravel road marks the eastern extent of the site.

Present conditions: The site is in a cultivated field and is receiving adverse impact from the effects of cultivation and occasional flooding.

Investigations

The site was visited twice during the summer. The investigation consisted of pedestrian survey and the collecting of exposed archeological materials from the surface. The site was located and designated by a Society archeologist accompanied by Kansas Archeological Training Program enrollees, and was also visited by the writer and the regular crew.

Archeological materials

The archeological materials encountered at 14LY339 consisted of historic and prehistoric artifacts, faunal remains, and a few scattered chunks of burned and unburned limestone. All prehistoric chipped-stone tools were collected, along with a representative sample of the chipped-stone debitage, historic material, and faunal remains.

Historic artifacts: One Bristol-cream-glazed stoneware body sherd was collected.

Prehistoric artifacts: The prehistoric artifact inventory consists of chipped stone, and includes one large, thick, lightly worked biface, two retouched flakes and two utilized flakes, all made of fossiliferous gray chert; and one circular, relatively flat, red quartzite hammerstone. None of the material is culturally diagnostic.

Faunal remains: Two small bone fragments, sections of the long bones of a large animal, were collected. Both are unburned and very eroded and are presumed to be modern in age.

Summary and conclusions

14LY339 is identifiable as representing the remains of an historic Euro-American farmstead and/or dump, and the remains of a prehistoric camp site of indeterminate age and cultural affiliation. The historic component is sparsely represented, and probably the result of the chance deposition of artifacts rather than an actual occupation. It is not historically significant. No historic or prehistoric structural remains were encountered, but sparse evidence of hearths was found in the form of a few scattered chunks of burned limestone.

The site has been adversely affected by cultivation, but due to its bottomland location, buried remains may be present. Testing will therefore be necessary for a determination of the site's scientific significance.

Site 14LY340

Site description

Reservoir location: At an elevation of 1065 ft, in the flood control pool, in the Flint Hills National Wildlife Refuge.

Soil type: Chase silty clay loam.

Setting: 14LY340 is in the bottomland on the right bank of the Neosho river and the immediate right bank of a minor tree-lined drainage. The site covers an area approximately 100 X 100 m in size on a broad, ill-defined alluvial terrace. The site is bordered on the immediate north by the minor drainage, and on the east by a lesser drainage which is not forested.

Present conditions: The site is in a cultivated field and is receiving adverse impact from the effects of cultivation and occasional flooding.

Investigations

The site was visited twice during the season. The investigation consisted of pedestrian survey and the collecting of exposed archeological materials from the surface. The site was located and designated by a Society archeologist accompanied by Kansas Archeological Training Program enrollees, and was also visited by the writer and the regular crew.

Archeological materials

The archeological materials encountered at 14LY340 consisted of prehistoric chipped-stone artifacts and a few small chunks of burned limestone. All artifacts encountered at the site were collected.

The artifact inventory includes one biface fragment, one endscraper fragment, one retouched flake, and one waste flake. Only the biface fragment is temporo-culturally diagnostic. It is the tip of an alternately beveled knife, made of heat-treated mottled pink chert.

Summary and conclusions

14LY340 is identifiable as representing the remains of a prehistoric camp site attributable, on the basis of the alternately beveled knife fragment, to one of the Middle Ceramic or Late Ceramic cultural complexes. The site is sparsely represented, with no evidence of structural remains and very minimal evidence of hearths.

The site has been adversely affected by cultivation, but due to its bottomland location, buried remains may be present. Testing will therefore be necessary for a determination of the site's scientific significance.

Site 14LY342

Site description

Reservoir location: At an elevation of 1065-1075 ft, at the edge of and above the flood control pool, in the Flint Hills National Wildlife Refuge.

Soil type: Dennis silt loam.

Setting: 14LY342 is in the uplands above the left bank of Eagle creek. The site covers an area approximately 250 X 300 m in size on the end of a high, easterly pointing upland ridge which

extends out from higher uplands located some distance to the west. The ridge slopes steeply down to an extensive bottomland area on the southwest, to Eagle creek on the immediate south and southeast, and to a minor forested drainage on the northwest, north, and east.

Present conditions: The site is lying fallow and is covered by a thin cover of grass and weeds. The site has been cultivated in the past, judging from the vegetational conditions. Soil erosion is pronounced along the steep southwestern flank of the ridge.

Investgations

The site was visited once during the summer. The investigation consisted of pedestrian survey and the collecting of exposed archeological materials from the surface.

Archeological materials

The archeological materials encountered at 14LY342 consisted of prehistoric chipped-stone artifacts. All tools, and a representative sample of the debitage were collected.

The artifact inventory consists of one biface fragment, two utilized flakes, two cores, and debitage. The biface fragment is made of fossiliferous gray chert. Its one unbroken edge is smoothly curved in a convex direction and is crudely flaked with little or no retouch. The artifact, which may have been a knife, is 9 mm thick.

The two utilized flakes include one field-chert flake, unifacially utilized along one wide, fan-shaped edge, and one fossiliferous gray chert flake, exhibiting minimal unifacial utilization wear along a portion of one partially broken edge. The two cores are both remnants of field-chert cobbles. Both are irregularly shaped, and little more than large shatter. One has been heat treated.

A total of 47 pieces of debitage, including 45 waste flakes and two pieces of shatter, were collected from the site. The total includes two primary, 11 secondary, and 32 blank decortication flakes, and two secondary pieces of shatter. All secondary and primary decortication specimens were derived from field chert. Approximately 30 percent of the debitage appears to have been heat treated.

Summary and conclusions

14LY342 is identifiable as representing the remains of a prehistoric camp site of indeterminate age and cultural affiliation. No structural remains or evidence of any other cultural features

were encountered on the surface of the site, a fact which may be due to the obscuring effect of the vegetational cover. The sparseness of the artifact inventory may also be due to this effect.

The site has been adversely affected by cultivation in the past, but the degree of this impact is uncertain due to the vegetational cover. Testing will therefore be necessary for a determination of the site's scientific significance.

PREVIOUSLY RECORDED SITES

During the 1979 investigation, 28 previously recorded sites, designated during earlier surveys of the reservoir, were visited by the writer and his crew. Investigation of the sites consisted primarily of pedestrian survey and the collecting of exposed archeological materials, along with the recording of any pertinent observations. Four sites, 14CF15, 14CF319, 14CF324, and 14CF328, were tested by means of soil core probes and/or the excavation of small test pits. Other priorities and a lack of time prevented the inspection of other previously recorded sites, most all of which were covered by a thick vegetational cover of winter wheat or brush.

No archeological materials were found at 10 of the sites, 14CF305, 14CF311, 14CF312, 14CF313, 14CF320, 14CF325, 14LY5, 14LY9, 14LY10, and 14LY12. Conditions for the finding of exposed archeological materials were bad at almost all those sites. 14LY5 had only a thin cover of winter wheat, but the rest of the sites were covered by grass, weeds, and/or brush. Significant adverse impact was noted at 14LY10, which may have been disturbed by levee construction, at 14CF305, which was undergoing erosion from wave action, and at 14CF311, 14CF312, and 14CF313, which were permanently water saturated and covered by silt and driftwood. No new conclusions were reached concerning the archeological status of any of the 10 sites.

A small amount of artifactual material, consisting of non-diagnostic artifacts such as debitage and an occasional biface section, was found at seven sites, 14CF16, 14CF17, 14CF35, 14CF321, 14CF322, 14CF324, and 14CF336. Conditions for the finding of exposed archeological materials were good at 14CF16 and 14CF17, which were in an open, cultivated field, but bad at the other sites, which were covered by grass, weeds, and/or brush. Testing was conducted at 14CF324, by means of one small test pit and several soil core probes, but no subsurface cultural remains were found. Possible adverse impact was observed at 14CF322, portions of the western edge of which may have been disturbed by construction of a small dam.

With one exception, no new conclusions were reached concerning the archeological status of the seven sites just discussed. 14CF324, recommended by Witty (1961b:18) for further testing, now appears to have little or no need for further work. The previous testing of the site in 1960, supplemented by the 1979 work, can be regarded as an adequate investigation of the site's potential. Witty, who personally participated in the 1979 testing, concurs with this conclusion (personal communication, 1979). Nevertheless, daub was found at the site in 1960 and some structural remains, other isolated features, or artifacts, could therefore still exist at the site. For that reason, it is recommended that roadwork, pipeline construction, and any other soil displacing activity be carefully monitored by a competent archeological observer.

Remains of a significant and/or diagnostic nature were found at 11 sites. At 14CF47, the base section of a small, thin, plain, triangular projectile point of the Fresno type (c.f. Bell 1960:47) was found, corroborating Roger's report (1979:18) of a Middle or Late Ceramic cultural affiliation for the site. One retouched flake and three pieces of debitage comprises the remainder of the material found at the site during the 1979 investigation. At the Gilligan site, 14CF332, extensively excavated by Witty in 1963 (Witty 1963c:19; Jones and Witty 1980:67-125), a small, corner-notched projectile point of the Scallorn type (c.f. Bell 1960:84) was found, quite in keeping with the Plains Woodland Greenwood phase cultural affiliation inferred for the site (Jones and Witty 1980: 67-72). Several biface sections and a few hundred pieces of debitage were observed as well. Numerous footprints and small piles of apparently discarded debitage were also found, indicating that the site had recently been visited by private collectors.

No new conclusions were reached concerning the archeological status of either 14CF47 or 14CF322, but at the other nine sites with significant and/or diagnostic remains, the 1979 investigations provided the basis for several new conclusions and recommendations to be made. Those sites, 14CF15, 14CF22, 14CF23, 14CF30, 14CF307, 14CF314, 14CF315, 14CF319, and 14CF328, are discussed individually in following sections of this chapter.

Site 14CF15

Previous investigations

Site 14CF15 was designated in the 1974 survey and reported by Rogers (1979:10). Rogers interpreted the remains to be representative of both Early Ceramic and Middle Ceramic occupations. He based the Early Ceramic interpretation on the presence of "...a notched projectile point..." and the Middle Ceramic inter-

pretation on the presence of "...cord-marked sherds tempered with indurated clay and shell..." (Rogers 1979:10). Daub was also reported from the site, which is located in a cultivated field.

Discussion

In 1979, 14CF15 was visited on two occasions. The investigation consisted of pedestrian survey, the collecting of exposed archeological materials, and the excavation of seventeen 45 cm² test pits, each dug to a depth of 45 cm below surface. The pits were located in a loose grid pattern across the length of the site.

The archeological materials encountered at 14CF15 in 1979 consisted of prehistoric ceramic and lithic artifacts, bone, and burned earth. In the excavation units, cultural remains were encountered in the initial 10 cm beneath the plow zone in three pits. Those remains were neither diagnostic nor plentiful, consisting of three waste flakes, one uninformative body sherd, one unidentifiable piece of bone, one unworked piece of sandstone, and one piece of burned earth. The surface of the site yielded an abundance of ceramic and lithic artifacts. One diagnostic lithic artifact was found, a medium-sized, expanding-stemmed, subconvex-based projectile point, nearly identical to the one found by Rogers (c.f. Rogers 1979: Figure 9,D).

Diagnostic ceramic artifacts at the site include the rim sherds and 101 body sherds, almost all of which have heavily cord-roughened exterior surfaces. The majority are tempered with indurated clay, but approximately ten percent are tempered with crushed bone. In general, the pottery is identifiable as Pomona ware (c.f. Wilmeth 1970:29-33).

One other rather distinctive ceramic artifact was also found at the site. It is an indurated-clay-tempered, smooth-surfaced, cone-shaped specimen, broken at both ends. The artifact has a maximum diameter of 19 mm, a minimum diameter of around 16 mm, and an extant length of 33 mm. It is longitudinally perforated by a small round hole, approximately 2 mm in diameter. The artifact is interpreted to be the stem section of an elbow-type pipe of bent tubular form, similar to those reported from Central Plains context (e.g., Bell and Gilmore 1936:322, or Witty 1963b: 20-21). The Pomona-like paste of the specimen suggests it was locally made.

Conclusions

The archeological materials recovered from 14CF15 in 1979 tend to substantiate at least one of the temporal identifications

made earlier by Rogers (c.f. Rogers 1979:10). The Middle Ceramic component can be more specifically identified, on the basis of the recently recovered artifactual evidence, as a manifestation of Pomona focus. In the opinion of the present writer, however, the identification of an Early Ceramic component cannot be fully supported, based as it is on limited and only relatively diagnostic lithic evidence.

Testing of the site during the 1979 investigation resulted in the discovery of a few small artifacts and a piece of bone and burned earth below the plow zone, but produced no evidence of an undisturbed cultural zone of any consequence. It is assumed on the basis of these basically negative results that most if not all of the site's primary archeological context has been destroyed. The site thus appears to have little or no investigative potential, and is unlikely to yield any further archeologically significant information.

Site 14CF22

Previous investigations

Site 14CF22 was designated during the 1974 survey and reported by Rogers (1979:12). Archeological materials observed at that time included "...a battered core and burned rocks" (Rogers 1979:12). No cultural affiliation was reported for the site, and no excavations were undertaken.

Discussion

In 1979, 14CF22 was visited on one occasion, and investigated by means of pedestrian survey and the collecting of exposed archeological materials. One rim sherd, one small and uninformative body sherd, one retouched flake, and one mollusc-shell fragment were found as a result of the investigation. The rim sherd is tempered with indurated clay and has a cord-roughened exterior surface and a plain, heavily scraped or wiped interior surface. Morphologically, the sherd is indicative of a bowl type of vessel. The sherd, which lacks a neck, is decidedly convex towards the exterior and has an extant rim height of 46 mm. Typologically, it appears to be a representative of Pomona ware (c.f. Wilmeth 1970:29-33).

Conclusions and recommendations

On the basis of the ceramic evidence recovered in 1979, the prehistoric component at 14CF22 can be attributed to the Pomona focus of the Middle Ceramic time period. The site is sparsely represented, with no evidence of structural remains and very limited evidence of stone hearths, but due to its bottomland

location, buried remains could be present. Testing will therefore be necessary for a determination of the site's scientific significance.

Site 14CF23

Previous investigations

Site 14CF23 was designated during the 1974 survey and reported by Rogers (1979:12). Archeological materials collected at that time consisted of one uninformative body sherd and one retouched flake. No cultural affiliation was reported for the site, and no excavations were undertaken.

Discussion

In 1979, 14CF23 was visited on one occasion, and investigated by means of pedestrian survey and the collecting of exposed archeological materials. One small, thin, plain, triangular projectile point was found as a result of the investigation. The artifact is identifiable as a representative of the Fresno point type (c.f. Bell 1960:44). No other archeological materials were found.

Conclusions and recommendations

On the basis of the evidence recovered in 1979, 14CF23 is identifiable as representing the remains of a prehistoric camp site attributable to one of the Middle or Late Ceramic cultural complexes. The component is sparsely represented, with no evidence of structural remains or any other cultural features, but due to its bottomland location, buried remains may be present. Testing will therefore be necessary for a determination of the site's scientific significance.

Site 14CF30

Previous investigations

14CF30 was designated during the 1974 survey and reported by Rogers (1979:14). No excavations were reportedly undertaken. The site was identified as Middle Ceramic on the basis of "...three sherds...one of which was shell tempered" (Rogers 1979:14). The only other materials reported from the site were flint chips.

Discussion

In 1979, the site was visited on two occasions, and investigated by means of pedestrian survey and the collecting of exposed archeological materials. Conditions were especially good for the finding of exposed materials, since the field had been recently cultivated and then washed by rain on the second of the two occasions.

The archeological materials encountered at the site during the investigation consisted of ceramic and lithic artifacts, eight bone fragments, and several scattered chunks of burned limestone. The lithic artifact inventory consists of three crude biface sections, three field-chert cores, and around 80 pieces of debitage, most of which was derived from field chert. None of the lithic remains are culturally diagnostic. The ceramic artifacts include four pieces of burned earth and 11 pottery sherds. Unfortunately, the sherds, described in the field notes as body sherds, have since been lost or mislaid and were unavailable for analysis. The same is true for the bone fragments, some of which had been burned.

Conclusions and recommendations

The 1979 investigation contributed little tangible evidence concerning the precise cultural affiliation of 14CF30. Being previously ascribed to the Middle Ceramic time period, it is likely that the site represents the remains of a Pomona focus occupation, but such an assumption must be regarded as speculative on the basis of the extant evidence.

The bottomland location of the site, along with the presence of burned limestone, burned earth, and burned bone suggests that buried and undisturbed cultural remains may be present. Testing will therefore be necessary for a determination of the site's scientific significance.

Site 14CF307

Previous investigations

Site 14CF307 was designated in the 1959-1960 survey and reported by Witty (1961b:11). Archeological materials recovered from the site at that time consisted of "...one endscraper, one knife tip, and a mussel shell fragment..." but a "...corner-tanged knife fragment and a side-notched point with basal notch, quite broad at the base and 17 mm long..." were also reported to have been found by a private collector (Witty 1961b:11). No cultural affiliation was reported for the site, and no excavations were undertaken.

Discussion

In 1979, the site was visited on one occasion, and investigated by means of pedestrian survey and the collecting of exposed archeological materials. The investigation resulted in the recovery of two very eroded body sherds, both tempered with indurated clay; one small, thin, plain, triangular projectile point, identifiable as a representative of the Fresno point type (c.f. Bell 1960:44); one thin biface, which is likely the basal fragment of a projectile point or knife; and

13 pieces of chipped-stone debitage. No other archeological materials were found. It was observed that the site, which is in the uplands and has been cultivated in the past, is presently receiving adverse impact from the effects of wave action erosion, which has stripped away the topsoil along the edge of the conservation pool and left a wide clay beach.

Conclusions

On the basis of the overall artifact inventory from the site, 14CF307 is identifiable as representing the remains of a prehistoric camp site attributable to the Pomona focus of the Middle Ceramic period. The component is sparsely represented, with no evidence of structural remains or any other cultural features. Judging from the paucity of the remains and the degree of impact, and the lack of surficial indicators of subsurface remains, the site appears to have little investigative potential and is unlikely to yield any further archeologically significant information. It can be regarded as lacking in scientific significance.

Site 14CF314

Previous investigations

Site 14CF314 was designated in the 1959-1960 survey and reported by Witty (1961b:11). No excavations were undertaken during the investigation. Archeological materials recovered at the site consisted of one small, indurated-clay-tempered sherd, an endscraper, and a few flakes. No cultural affiliation was reported for the remains.

Discussion

In 1979, 14CF314 was visited on three occasions, and investigated by means of pedestrian survey and the collecting of exposed archeological materials. On the last of the three occasions, conditions were excellent for the finding of exposed materials, since the field had been recently cultivated and then washed by rain.

The investigation revealed the site to be of much larger areal extent than had previously been recognized. The description in the original field notes stated that the site was enclosed in a little cove of trees, with a slough to the east and Otter creek to the immediate southeast. The 1979 investigation encountered archeological material not only in that location but for a distance of some 300-400 m on further northwest, stretching along the westerly edge of a long, shallow, northwest-southeast-trending drainage which terminates in the slough described in the field notes. No real "break" in the scatter of material was observed, although

the abundance of material diminishes in the extreme northwest. The site covers an area approximately 500 X 150 m in size.

Several diagnostic artifacts were collected from the site in 1979, along with a few thin bifaces and retouched flakes, one core, some 100 pieces of debitage, and one burned earth fragment. The diagnostic materials include one small, thin, plain, subtriangular projectile point with a straight base and very convex sides, typologically identifiable as a variant of the Fresno projectile point type (c.f. Bell 1960:44); one small, thin, side-notched, triangular projectile point, a representative of the Washita point type (c.f. Bell 1958:98); and one alternately beveled, diamond-shaped knife. Two of the thin bifaces also appear to be fragments of small points of the types just described.

Conclusions

On the basis of the general artifact inventory, 14CF314 is identifiable as representing the remains of a prehistoric camp site attributable to one of the Middle or Late Ceramic cultural complexes. The 1979 investigation revealed that the site covers a much larger area than had been previously recognized. The component is represented by an abundance of artifactual material, but yielded no ceramics and no evidence of structural remains or any other cultural features. Nevertheless, due to the site's bottomland location, buried remains could be present. Testing will therefore be necessary for a determination of the site's scientific significance.

Site 14CF315

Previous investigations

14CF315 was designated in the 1959-1960 survey, and reported by Witty (1961b:14). No excavations were undertaken in the investigation. The archeological material was described as "...scanty...", consisting of "...two bifaced knife fragments, retouched flakes, and flint chips, but no pottery" (Witty 1961b:14). A small, triangular, side-notched point was also reported by Witty to have been found at the site by a private collector (1961b:14). No cultural affiliation was described for the remains.

Discussion

In 1979, 14CF315 was visited on three occasions, and investigated by means of pedestrian survey and the collecting of exposed archeological materials. On the last of the three occasions, conditions were excellent for the finding of material, since the field had been recently cultivated and then washed by rain. The artifacts collected from the site in 1979 consisted

of one diagnostic artifact, a small, thin, plain, triangular projectile point of the Fresno type (c.f. Bell 1960:44), along with a section of a notched, medium-sized projectile point, two retouched flakes, one core, and 75 pieces of debitage.

Conclusions

On the basis of the general artifact inventory from the site, 14CF315 is identifiable as representing the remains of a prehistoric camp site attributable to one of the Middle or Late Ceramic cultural complexes. The component is relatively well represented at least by lithic artifacts, but no ceramics and no evidence of structural remains or any other cultural features were found. Due to the site's bottomland location, however, buried remains may be present. Testing will therefore be necessary for a determination of the site's scientific significance.

Site 14CF319

Previous investigations

14CF319 was designated in the 1959-1960 survey and reported by Witty (1961b:15). No excavations were carried out during the investigation. Witty described it as being a small site, evidenced by "...fragments of burned sandstone and chips of chert...", and reported that a "...very thin and beatifully worked biface blade...pointed at both ends..." had apparently been found by a private collector (1961b:15). No cultural affiliation was ascribed to the remains.

The site was investigated again during the 1971 survey. At that time, a projectile point "...that is probably Early Ceramic..." was found on the surface, along with several endscrapers, bifaces, and cores (Rogers 1979:5). Rogers reported that wave action from the reservoir had resulted in erosional damage to the northern portion of the site, exposing "...burned rock and flint chips..." which appeared to be coming from "...approximately 25 cm below surface" (Rogers 1979:5). He further noted that part of the site was covered with trees and showed no evidence of being disturbed by plowing. No excavations were undertaken.

In 1979, 14CF319 was visited on three occasions, and investigated by means of pedestrian survey, the collecting of exposed archeological materials, and the excavation of fifteen 60 cm² test pits. It was observed during the course of the investigation that the wave-action erosion described by Rogers has continued to adversely affect the site. Topsoil has been stripped from the edges of the former upland ridge, resulting in a narrow clay beach and numerous cutbanks. Archeological materials have been exposed and washed out of situ by the erosional process.

The 15 test pits were each dug to a depth of 55 cm below surface. Six of the excavation units were located on the forested point of land in the northwestern portion of the site, the area presumably referred to by Rogers. No plow zone was apparent in those pits. The remainder of the units were scattered throughout the cultivated portion of the site, usually in areas where burned limestone was encountered on the surface.

Intact cultural remains were found in four test pits, all of which were located on the forested point of land in the northwest portion of the site. In general, the remains consisted of light charcoal flecking, a few waste flakes, one core, an animal tooth and several small and unidentifiable burned and unburned bone fragments, and numerous small pieces of sandstone. The animal tooth is attributable to a large animal such as a bison, elk, or deer. One diagnostic artifact was found, a cord-roughened, indurated-clay-tempered rim sherd, identifiable as a representative of Pomona ware (c.f. Wilmet 1970:29-33). The sherd was recovered from within 0-20 cm below the surface.

Most of the cultural material was found in the initial 20 cm, but in two closely adjacent pits a thin but definite cultural horizon was encountered at a depth of 39-46 cm below the surface. The remains were quite minimal, however, consisting of one unifacially flaked piece of shatter, three waste flakes, one burned and one unburned bone fragment, and scattered but prominent charcoal flecking.

In another test pit nearby a possible cultural feature, a concentration of small sandstone slabs, was found at a depth of 24-35 cm below the surface. Horizontal dimensions of the concentration were approximately 65 X 75 cm. The concentration may have been the remains of a hearth, but there was little to distinguish it as such. Five waste flakes and one burned bone fragment were found among the rocks, but very little charcoal flecking and no burned earth were observed. It should be noted that sandstone was rather ubiquitous at the site, although most of the sandstone was of a smaller size and much looser concentration than that encountered in the feature.

From the surface of the site, a number of diagnostic artifacts were collected, along with two drill fragments, three thin bifaces, two retouched flakes, four small cores, some 150 pieces of chipped-stone debitage, three burned earth fragments, and one cranial bone fragment, possibly human. A large amount of debitage was left at the site.

Diagnostic materials include six pottery sherds and three projectile points. The sherds are cord-roughened and indurated-clay tempered, typologically identifiable as representatives of

Pomona ware (c.f. Wilmeth 1970:29-33). The projectile point inventory consists of one small, thin, side and basally notched, triangular projectile point, a representative of the Harrell point type (c.f. Bell 1958:30); the stem and midsection of a contracting-stemmed, convex-based point, a representative of the Gary point type (c.f. Bell 1958:28); and the stem section of a contracting-stemmed, concave-based point, a representative of the Langtry point type (c.f. Bell 1958:38). A section of a medium-sized, corner-notched point of uncertain typological affiliation was also found.

Conclusions and recommendations

On the basis of the 1979 investigation, 14CF319 is identifiable as representing the remains of a prehistoric camp site attributable to the Pomona focus of the Middle Ceramic time period. The component is well represented by lithic artifacts, but few ceramic artifacts and no evidence of structural remains were found. Limited testing of the site revealed the subsurface presence of a thin but intact cultural horizon and one possible cultural feature, an apparent sandstone hearth. The horizon was of a minimal nature and is apparently of limited areal extent. Judging from the largely negative nature of the testing results, the site apparently has little or no investigative potential. Further investigations are unlikely to yield any further archeologically significant information. In short, the site no longer appears to be scientifically significant.

Site 14CF328

Previous investigations

Site 14CF328 was designated in the 1959-1960 survey and reported by Witty (1961b:19). At the time of the survey, the presence of a heavy soybean crop prevented examination of the surface. The site was apparently designated on the basis of a reliable informant's report of finding sherds in that location. No cultural affiliation was described.

Discussion

In 1979, the site was visited on two occasions. Conditions were good for the finding of exposed archeological materials, since the field had been recently cultivated and then washed by rain on both occasions. The archeological investigation consisted of pedestrian survey, the collecting of all exposed archeological materials, and the taking of approximately 40 soil probes. The testing failed to produce any evidence of intact subsurface remains.

The archeological materials encountered at the site consisted of an abundance of daub along with two nondiagnostic chipped-stone bifaces and a dozen pieces of chipped-stone debitage. Several pieces of the debitage are the grayish brown chert with organish limestone cortex encountered at several other of the Lebo creek sites.

Conclusions and recommendations

On the basis of the 1979 investigation, 14CF328 is identifiable as the remains of a prehistoric habitation site of indeterminate cultural affiliation. The presence of a large amount of daub, and the proximity of the site to two Pomona focus habitation sites, 14CF369 and 14CF370, suggests that 14CF328 is likewise a manifestation of Pomona focus occupation. Nevertheless, no definite evidence in support of this thesis was found.

Testing of the site during the 1979 investigation produced no evidence of intact subsurface remains, despite extensive soil-core probing in and around the daub scatter. It is assumed on this basis that most if not all of the site's primary archeological context has been destroyed by cultivation, and that further testing is unwarranted. The site thus appears to have little or no investigative potential and is unlikely to yield any further archeologically significant information.

VII. SUMMARY AND CONCLUSIONS

The results of the 1979 John Redmond reservoir investigation were largely successful in meeting the goals set out in the research design. Unfortunately, it did not prove possible, due to high water levels, to test 14CF343, the Arrowhead Island site. Approximately 2,700 acres of the reservoir area were investigated by means of archeological survey (see Figure 12) with the summer's activities resulting in the locating and recording of 85 previously undocumented sites. In addition, 28 previously recorded sites in the reservoir were revisited and examined. All 113 sites were investigated by means of pedestrian survey and the collecting of exposed archeological materials. Limited testing was carried out at 29 sites, and extensive test excavations were conducted in addition at four of those sites. The survey and testing results were accomplished in large part due to the supplementary efforts of the Kansas Archeological Training Program personnel. A total of 270.5 person-days of work were carried out by the regular crew, along with approximately 515 person-days of work donated by Society archeologists and Kansas Archeological Training Program enrollees and 8.5 person-days of work by Youth Conservation Corps workers. The following sections of this report summarize the results of the investigation and present the conclusions and recommendations engendered by it.

SITE CULTURAL AFFILIATIONS

The 1979 investigation resulted in the recognition of Archaic, Early Ceramic, Middle Ceramic, Late Ceramic, and/or Historic components at various sites. At one site, 14CF1320, radiocarbon dating aided in the temporo-cultural identification, but in all other cases cultural affiliation was determined on the basis of ceramic and/or lithic artifacts believed to be typologically diagnostic of the different time periods and/or specific cultures. At each of 30 of the newly recorded sites, however, the remains were so nondiagnostic as to provide no indication whatsoever of the site's cultural affiliation. These sites are listed in Table 1. Likewise, it was possible to identify components at some of the other newly recorded sites only in a general way, as being, for example, attributable to either Middle Ceramic or Late Ceramic occupation. Those sites are listed in Table 2.

Archaic Components

Archaic components were identified at three of the newly recorded sites, 14CF1310, 14LY328, and 14LY329. Specific cultural affiliation was possible at one site, 14LY329, which yielded a section of a Munkers Creek knife, thus enabling the

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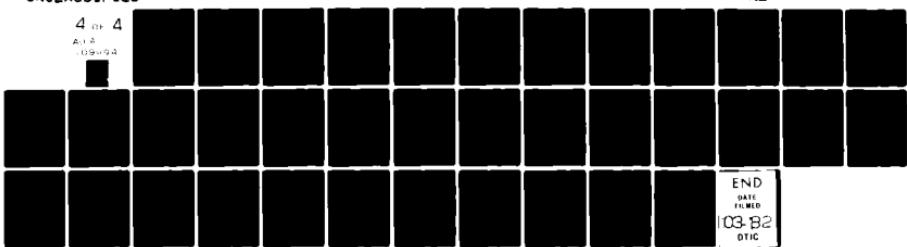
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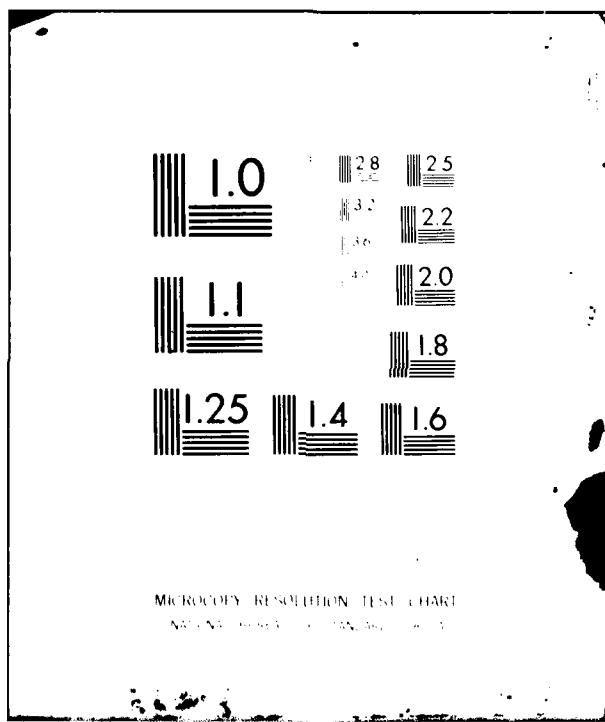
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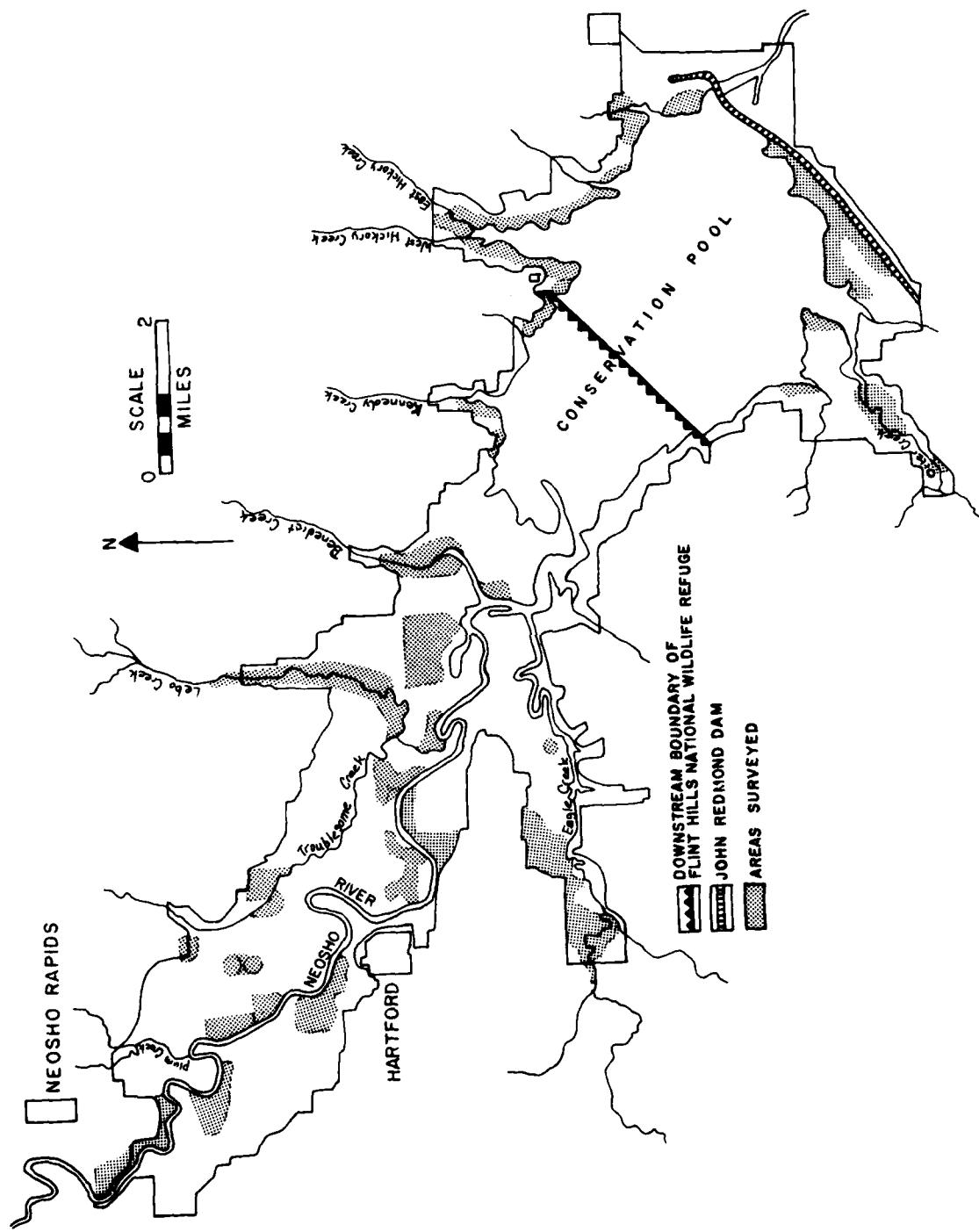


FIGURE 12. Map showing location of areas surveyed in the 1979 investigation.

TABLE 1. SITES OF INDETERMINATE CULTURAL AFFILIATION

14CF354	14CF376	14CF384	14CF1301	14CF1321	14LY336
14CF359	14CF377	14CF385	14CF1311	14LY321	14LY337
14CF364	14CF378	14CF386	14CF1312	14LY324	14LY338
14CF374	14CF379	14CF397	14CF1313	14LY331	14LY339
14CF375	14CF383	14CF399	14CF1317	14LY332	14LY342

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TABLE 2. SITES WITH COMPONENTS OF UNCERTAIN OR
GENERALIZED CULTURAL AFFILIATION

Sites with components attributable to either Early or Middle Ceramic occupation:

14CF352	14CF366	14CF380	14CF382	14CF393	14LY325
14CF363	14CF368	14CF381	14CF389	14CF396	

Sites with components attributable to either Middle or Late Ceramic occupation:

14CF360	14CF372	14CF1318	14LY340
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Sites with components attributable to one of the Ceramic complexes:

14LY335

identification of a Munkers Creek phase component. However, Munkers Creek-like projectile points were also found at 14LY328 and 14CF1310, and the Archaic components there could also be representative of Munkers Creek phase. No Archaic remains were recognized at any of the previously recorded sites that were revisited.

The Archaic components identified in the investigation are confined to sites in the uplands, on prominent upland ridges along the edges of the Neosho river and Lebo creek valleys. Archeological remains of a later date were also present at each of the sites. The artifacts which could be confidently attributed to Archaic occupation, on typological grounds, include a section of a Munkers Creek knife, and projectile points assignable to or reminiscent of the Logan Creek, Lamoka, Lange, Travis, Uvalde, or Munkers Creek point types previously defined or proposed by various authorities. The points, which are an inferential indicator of hunting, provide the only reliable evidence of Archaic subsistence activities, since the components were all found in a disturbed condition on the surface and in association with the remains of other cultures of a later date.

Early Ceramic Components

The 1979 investigation produced one newly recorded site, 14CF353, which could be confidently interpreted as an Early Ceramic manifestation. It is regarded as a representative of the Greenwood phase. The strong possibility of an Early Ceramic component was inferred for seven other newly recorded sites, 14CF360, 14CF394, 14LY327, 14LY328, 14LY329, 14LY333, and 14LY334. In addition, 11 other sites, listed in Table 2, were identifiable in a general way as manifestations of either Early Ceramic or Middle Ceramic occupation. No definite Early Ceramic remains were recognized at any of the previously recorded sites that were revisited.

A more certain identification of Early Ceramic components was prohibited by the absence of any really clearcut ceramic indicators. At 14CF353, the pottery displayed several notable characteristics of Verdigris ware, but none of the ceramics at the other sites exhibited the limestone tempering which is such a distinctive characteristic of this ware (Calabrese 1967: 58), although pottery sherds from 14CF394 and 14LY327 exhibited "cell" tempering suggestive of leached-out limestone tempering. In corroboration of the somewhat tentative Verdigris ware identification at 14CF353, Hopewellian-like grit-tempered pottery was also found at the site and the diagnostic lithic evidence was of a wholly Early Ceramic nature, consisting entirely of medium to large-sized stemmed and corner-notched projectile points. At 14CF360, by way of contrast, Hopewellian-like pottery was

present but in association with projectile points attributable to Middle or Late Ceramic occupation.

At the other 4 sites, 14LY328, 14LY329, 14LY333, and 14LY334, the possibility of an Early Ceramic occupation was inferred on the basis of projectile points of the Edgewood, Ellis, Ensor, Williams, Scallorn, Gary, and Langtry types. However, these points appeared to provide insufficient evidence on which to base a positive identification of Early Ceramic occupation, since they were found on the surface in association with Pomona-like pottery and lithic artifacts indicative of Middle Ceramic and sometimes Archaic occupations. At the other 11 sites listed in Table 2 as being either Early or Middle Ceramic, such remains were not present, but the projectile points which were found are representative of point types found in Middle Ceramic Pomona focus context as well as in Early Ceramic context.

Reliable evidence of Early Ceramic subsistence-settlement systems was therefore available only at 14CF353. The site is located in the Otter creek bottomland, adjacent to a flood channel of the creek. A hearth was present at the site, along with burned and unburned faunal remains, including mollusc-shell fragments. The animal bone at the site was derived from antelope or deer, and probably bison. A hunting and gathering subsistence pattern would appear to be represented by this evidence.

Middle Ceramic Components

The 1979 investigation resulted in the identification of 31 Middle Ceramic components at the newly recorded sites. All were attributable to Pomona focus occupation on the basis of the presence of relatively thin, cord-roughened, indurated-clay and/or bone and shell-tempered pottery sherds identifiable as Pomona ware (c.f. Wilmeth 1970:29-33). Sections of alternately beveled knives and/or small, thin, triangular projectile points typical of the Middle and Late Ceramic periods were present with the pottery at almost all the sites. At nine of the sites, the remains of daub covered houses were also found. Similar lithic and ceramic inventories were recovered from four previously recorded sites as well, enabling them to be identified as Pomona focus components. All the newly identified components are listed in Table 3.

Similar lithic assemblages, unaccompanied by ceramic remains, were found at four newly recorded and two previously recorded sites, forcing them to be identified in a less certain fashion as representatives of either Middle or Late Ceramic occupation (see Table 2). However, judging from the paucity of recognizable Late Ceramic remains other than possibly Pomona focus in the reservoir area (see following section), those seven sites are likely attributable to Pomona occupation.

TABLE 3. SITES WITH NEWLY IDENTIFIED POMONA FOCUS COMPONENTS.

Newly recorded sites:				
14CF355	14CF367*	14CF392	14CF1319	14LY330
14CF356	14CF369*	14CF395	14CF1320*	14LY333
14CF357*	14CF370*	14CF398	14LY322	14LY334*
14CF358	14CF371	14CF1310	14LY323	
14CF361	14CF373	14CF1314*	14LY326	
14CF362	14CF387	14CF1315	14LY328*	
14CF365	14CF388	14CF1316	14LY329*	
Previously recorded sites:				
14CF15*	14CF22	14CF307	14CF319	

* Sites with daub, interpreted as evidence of structural remains.

Five partially undisturbed Pomona components were identified and tested during the course of the investigation. Testing at 14CF357 revealed an abundance of faunal remains in a partially undisturbed cultural horizon, portions of which still exist, but no notable cultural features were found despite rather intensive excavation efforts. At 14CF369, the slightly truncated remains of a daub-covered house was found, accompanied by associated features. The house was excavated, but lack of time prevented an expansion of the investigation to seek out isolated cultural features such as exterior hearths, storage pits, and borrow pits which are assumed to be present at the site. Testing at 14CF1320 encountered a largely undisturbed limestone complex, and two intact trash-filled pits, interpreted as a storage pit and a borrow pit, respectively. Portions of the limestone complex still remain at the site, and evidence indicates that buried structural remains, along with associated features, may be present. 14LY329 had a partially truncated trash pit as part of an intact buried cultural horizon. It is assumed that much more of the horizon, possibly including other cultural features, still exist since the site was not wholly excavated. 14CF15 also has a partially undisturbed cultural horizon, but it appears to be of a very minimal nature with no scientific significance. No cultural features were encountered at that site, and most if not all of the component appears to have been disturbed by cultivation.

The artifact inventories of the newly identified Pomona components are interesting in several regards. The Pomona ware recovered in the investigation is typically cord-roughened and indurated-clay tempered, with very little decoration other than channeling or collaring of the rim and occasional tool impressions of the lip. Bone tempering is, predictably, present but of minor extent, being found in sherds at only six of the 36 components investigated and comprising only a small proportion, ranging from next to nothing up to ten percent, of the sherds found at those sites. Somewhat surprisingly, shell-tempered Pomona ware was also found, at 14CF1320. Those sherds account for at least 4.3 percent, and possibly more, of the pottery recovered at that site. Two other ceramic items, the pipe fragment from 14CF15 and the incised neck sherd from 14CF367 are also of some interest since they may represent the results of Mississippian or Central Plains influence.

Diagnostic lithic remains recovered from the Pomona components consist of sections of beveled and alternately beveled knives, and projectile points of the small, thin, triangular types common to the Middle and Late Ceramic periods. The various point types represented include Fresno, Madison, Washita, Harrell, Reed, and Huffaker. These artifacts, which provided reliable corroboration of the ceramic-based cultural identifications, were often accompanied by projectile points typologically identifiable as either Early

Ceramic or Middle Ceramic. Such point types as Scallorn, Keota, Ensor, Ellis, Edgewood, Marcos, Williams, Langtry, and Gary appear to be represented. The possibility of an Early Ceramic component being represented by these points must be considered, but points of these types comprise a predictable minority in Pomona point inventories and it is quite likely, if not wholly self-evident, that they derive from the various Pomona occupations.

Notable lithic items of a nondiagnostic nature were found at a few of the sites. The inventory includes a sandstone grinding slab, found at one site; sandstone mullers, found at two sites; and small, unworked hematite fragments, found in primary context at the four extensively excavated sites as well as on the surface of several other sites.

Evidence of Pomona subsistence activities was found at several sites. Hunting was obviously of some importance, since projectile points were found at nearly all the sites investigated. Judging from the number of endscrapers and other such scraping tools that were encountered, the working of hides for use as clothing and/or shelter was a commonly practiced activity. Both large and small animals were evidently procured. Bison remains were found at several Pomona sites, particularly 14CF357, and a few elk, antelope or deer bones were also recovered. At 14CF1320, fish and turtle remains were found. Gathering was also practiced, although the evidence is less plentiful, as would be expected due to the generally adverse preservational conditions. The gathering of clams and floral resources is evidenced by the mollusc shells and the *Chenopodium* and nutshell fragments found at 14CF1320, and the milling of *Chenopodium* and other such seeds may be inferred from a grinding slab found at 14LY329 and the mullers found at two other sites. In summary, the data recovered during the 1979 investigation indicates hunting and gathering to be the subsistence activities practiced by Pomona focus peoples in the John Redmond area. No evidence of horticulture was found.

The investigation produced some rather interesting data concerning Pomona settlement patterns. In the past, Pomona sites were thought to be confined for the most part to bottomland areas. For example, Witty has described them as being located "...along low terraces or on natural levees on the valley floor..." (Witty 1978:60). And in fact, many Pomona sites have been found in bottomland locations at John Redmond and elsewhere, typically next to prominent meander scars, intermittent oxbow lakes. Such sites as 14CF369 and 14CF15 provide nearly textbook examples of this sort of settlement pattern. It should be noted, however, that a bottomland-oriented settlement pattern is the kind most likely to be interpreted when circumstance compels archeological

workers to concentrate their efforts in bottomland areas of soon-to-be-inundated reservoirs, as has generally been the situation in the past, at least in eastern Kansas.

In connection with these interpretations, it has been suggested that the houses at such sites were used seasonally rather than permanently. For example, at the Hart site, the Pomona focus type site in Melvern reservoir, the amorphous shape of the house and the clustering of the posmolds had been interpreted as indicating hasty construction with subsequent alteration and repair at frequent intervals (J. Mett Shippee, in a personal communication cited by Wilmeth, 1970:42). In apparent corroboration of this interpretation, Wilmeth, recalling the thin nature of the cultural deposits at the Hart site, asserted that "...there is a definite suggestion of a site periodically visited rather than one occupied continuously" (1970:42).

Little has been said, however, or at least made available in the literature, about where these groups might have gone during their periodic removes from their bottomland sites, or how often they moved, or the reasons for their moving. Kivett's suggestion concerning Plains Woodland peoples in Nebraska should be considered in this regard. He suggested that Plains Woodland camp or village sites may have been on the flood plains in the winter and at higher elevations during the summer, when the lower elevations were more subject to flooding (1970:95) and, one might add, to mosquitos and other pestilential insects common to riverine environments.

The results of the 1979 John Redmond investigation appear to have a great deal of relevance to the matter, since 21 of the 35 Pomona components investigated are located in the uplands. Some of the sites are quite high above the flood plain, although all are at the valley's edge, and the amount and nature of the remains at several of the sites suggests occupation of some intensity. Seven of the 21 sites yielded grass-impressed daub, indicating the former presence of daub covered houses, and at one site, 14CF370, two houses were apparently present. In this regard, it is worth noting that daub was found at only three of the 14 bottomland Pomona sites investigated. Clearly, the idea that Pomona groups lived almost entirely in bottomland locations can now be modified. The John Redmond data provides conclusive evidence that the Pomona settlement pattern involved an extensive use of the uplands, use which may have equalled or exceeded their use of the valley floors.

Late Ceramic

The 1979 investigation provided little clearcut evidence of Late Ceramic occupations in the John Redmond area. Evidence of groups known from outside the region was found at two sites. At

14LY330, a pottery sherd identifiable as Geneseo ware, a ware associated with the Great Bend aspect, was found. At 14CF357, shell-tempered pottery sherds of the kind typically found in Oneota aspect and Neosho focus context were recovered. In both cases, the sherds were numerically minor elements at sites with clearly identifiable Pomona focus components, and it is therefore quite possible that they represent vessels acquired by Pomona peoples through trade or some other sort of contact. Actual occupations by Great Bend, Oneota, or Neosho groups should not be ruled out, but the evidence is not compelling in this regard.

Historic Components

Archeological remains at 44 of the newly recorded sites were indicative of occupation and/or land use during the historic time period. The historic components were defined primarily on the basis of such diagnostic artifacts as stoneware, whiteware, glass, and metal objects, and secondarily on the basis of structural remains. Apparent gunflints were found at one site, 14CF357. All the components are believed to be attributable to Euro-American settlers rather than any of the native or immigrant Indian tribal groups, although the gunflints at 14CF357 could be attributable to either. It should also be noted that the Late Ceramic evidence described in the previous section, particularly the Geneseo pottery sherd, could derive from the early part of the historic period.

Historical research indicated 19 of the components to be manifestations of known historic occupation, primarily the remains of farmhouses and/or associated outbuildings along with a store in the Neosho Rapids area and an educational institution, The Western Christian University, in Ottumwa. The remainder of the historic components contained no structural remains and only a few broken and isolated artifacts. Historical research revealed no evidence of structures at those particular sites during the early settlement period, ca. 1854-1878. These components are therefore thought to derive from the chance deposition of artifacts, by means of a manure spreader or some other incidental agency, rather than from an actual occupation of the site.

None of the structural remains, nor for that matter any of the historic components, appear to be particularly notable. The Ottumwa College site has some local historical significance, being the remains of the earliest educational institution of higher learning in the area, but the university building has been so thoroughly destroyed that all preservational viability has been lost.

PAST AND PRESENT IMPACT CONSIDERATIONS

The 1979 investigation revealed that all the newly recorded sites, as well as the previously recorded sites not permanently inundated by the reservoir, are receiving or have received adverse impact from the effects of cultivation, construction, wave action, water saturation, and/or vandalism. Cultivation accounted for the bulk of the adverse impact, especially in the more arable bottomland locations. A total of 76 of the newly recorded sites are presently being cultivated or appear to have been cultivated in the past. At each of 23 of those sites, in the uplands, repeated cultivation has brought the distinctively colored subsoil to the surface across portions or all of the site, indicating that most if not all of the site's primary archeological context has been destroyed.

Constructional activities of various kinds was found to have affected portions of 20 of the newly recorded sites. Road construction was the most common source of damage, followed by and often in conjunction with the construction of recreational facilities. Eight sites have been affected to some degree by these types of construction. Prehistoric components at 15 sites have been or may have been at least partially affected by the construction of foundations for farm buildings. Agricultural terracing was found to have affected, often severely, a total of eight upland sites. The construction of small dams and levees, built primarily to create ponds and marshy areas for waterfowl, affected portions of four newly recorded sites and one previously recorded site.

Wave action was particularly destructive to most of the sites located at or closely adjacent to the conservation pool, especially upland sites in the lower part of the reservoir in and around the Hickory creek area. A total of 13 newly recorded sites, along with such previously documented sites as 14CF319 and 14CF343, have been damaged to some degree, often severely. The impact of such erosion has been heightened, unfortunately, by fluctuations in the reservoir level due to flooding.

Several sites have been adversely affected by being permanently or near permanently water saturated. Impact of this sort is most pronounced at 14CF350, located at the base of the dam, and at three previously recorded sites, 14CF311, 14CF312, and 14CF313, located in shallowly sloping areas along the southwestern edge of the conservation pool. Numerous other sites, however, particularly in the Otter creek area, have been similarly affected for varying amounts of time during flood periods.

Vandalism, whether intentional or otherwise, is also a problem in the reservoir. Three sites are being used intermittently as ad hoc recreational areas, complete with vehicular traffic and the construction of campfires. It is uncertain as to the number of sites from which artifacts have been taken, and information thus destroyed, by unauthorized artifact collectors. Some sites, such as 14CF362, are almost certain to be collected from due to their proximity to authorized recreation areas. Others, such as 14CF332 and 14CF394, and previously recorded 14CF343, are already well known to local collectors. Unauthorized excavations are known to have taken place at 14CF343, the Arrowhead Island site, and others have undoubtedly been undertaken at other sites in the reservoir.

CULTURAL RESOURCE MANAGEMENT PLAN

Background

Reservoir projects, by virtue of their locations across rivers and valleys, are placed in the area of highest potential for both prehistoric and historic cultural resources. The construction of major federal reservoirs has long been recognized to have an adverse effect upon the preservation of archeological sites. The negative impacts of such projects can be substantially offset with professional expertise, by land managers as well as archeologists, if the nature of the impacts and the variety of preservational techniques are understood. Within a large, multi-purpose reservoir project like John Redmond, the degree of impact varies according to the location of the site, i.e., whether it is within a construction area, the conservation pool, the flood control pool area, or the noninundated land bordering the reservoir. Land-use practices within the reservoir constitute another factor of influence.

Archeological research/management plans are designed to alleviate the destructive effects of reservoir construction and modern land use practices by providing for mitigative procedures at archeological sites. Archeological remains are a nonrenewable cultural resource. If we are to learn about the past, efforts must be made now to conserve the evidence, because each day such remains are damaged or destroyed by modern land use. There are neither enough funds nor enough personnel to excavate all the sites, however, nor is there a need to excavate them all. Nevertheless, the need for information requires methods of conservation for at least a selected portion of these cultural resources.

Actual physical preservation, of course, is the ideal method of conservation. The preservation of sites for future investigations will presumably allow for development of more sophisticated techniques of data recovery and make possible a greater understanding of what they represent. It is advisable, therefore,

to preserve the most important sites from the adverse effects of such things as cultivation and to leave them for future investigators. When that alternative is not feasible, and the site is important, it is necessary to preserve it abstractly by means of a controlled excavation using scientific procedures involving the recording of pertinent observations and the careful recovery and analysis of physical remains. In other cases, such as when testing indicates that all primary archeological context appears to have been destroyed, the site can be left in cultivation and any adverse impact mitigated by means of the collecting of exposed archeological materials. Other preservational possibilities also exist. In short, there are a number of mitigative alternatives, depending on land-use practices and considerations of a site's archeological potential and significance.

Preservation is not always possible. Within the construction areas and the conservation pool area of a reservoir, all of the archeological sites are destroyed or damaged, or at best made inaccessible due to inundation. First to be destroyed are those sites in construction areas, borrow pits, access roads, areas of timber removal, etc. Witty, for example, observed several habitation sites being exposed and destroyed by bulldozers during timber removal in the initial stages of the construction of John Redmond reservoir (1978:2). Those sites which survive such activities, but which become inundated by the conservation pool, are subject to adverse impact from the effects of wave action, current activity, chemical processes, and other factors, although sites in very deep waters are less subject to these effects (Garrison 1975:282-288).

The bulk of the known archeological sites in the John Redmond reservoir are located in the flood control pool area. Those sites are affected by both natural and cultural factors. Natural factors include periodic inundation, wave action, and sedimentation, the impact of which varies according to the elevation of the site and the fluctuations in the reservoir level. Wave action is particularly destructive to shoreline or near-shore sites, which "...undergo a cycle of Exposure-Inundation-Exposure ad infinitum until the sites are destroyed or until context is so altered as to be of limited use to the archeologist" (Garrison 1975:284). Land use practices are in some cases no less damaging. Agricultural terracing, for example, is particularly destructive to archeological sites. Cultivation is less dramatic, but sometimes just as effective in destroying a site's primary archeological context by plowing and mixing the upper soil zones and contributing to soil erosion. Sites in the flood control pool at John Redmond are also subject to damage from roadwork, pipeline construction, and borrow-pit excavations deriving from the construction and development of the reservoir. Vehicular traffic and vandalism constitute other forms of adverse impact deriving from the use of these lands for recreational

purposes. The vandalism, which is known to occur at some sites and may occur at all exposed sites in the flood control pool, ranges from pot hunting, or digging for artifacts, to the simple collecting of artifacts from the surface of sites. The damage is heightened by the fact that the collectors and pot hunters often remove from the sites the most archeologically informative artifacts, such as projectile points and pottery, which are used as primary chronological indicators.

Cultural management alternatives which are available to mitigate the destructive effects suffered by flood control pool sites include the cessation of cultivation, the planting of inundation resistant vegetation, and the enforcement of various legislative acts, such as Title 3, Rules and Regulations Governing Public Use of Water Resource Development Projects Administered by the Corps of Engineers, and Public Law 96-95, the Archeological Resources Protection Act of 1979, which prohibit pot hunting and the surface collecting of most artifacts. The latter two alternatives should be followed as a matter of course throughout the reservoir area.

Sites above the flood control pool are not subject to inundation and wave action, although the peripheries of several such sites in the John Redmond area could be impacted during periods of extreme flooding. For most of the sites above the flood control pool level, agricultural activities constitute the major form of adverse impact. Many of the sites, however, are or may be threatened to one degree or another by roadwork, pipeline construction, borrow-pit excavation, and/or vandalism associated with the development and use of the reservoir. The preservational techniques mentioned earlier are not always possible for these sites, since several are located on privately owned land. Since sites above the flood control pool level are not subject to inundation, however, they have interpretive possibilities. Sites of special historical and cultural significance, for example, could be developed to provide attractive recreational and educational benefits for local residents and visitors.

In summary, the results of the effects of the John Redmond reservoir project on sites in and around the reservoir can be categorized and described in terms of three zones, as follows:

1. Destruction and/or Inaccessibility. Sites located in construction areas and within the conservation pool, i.e., all sites below the 1036 ft elevation level.
2. Damage and/or Eventual Destruction. Sites which lie within the flood control pool area, which ranges from 1036-1068 ft in elevation.

3. Possible Damage, and Interpretive Opportunities. Sites which lie above the maximum flood control pool level of 1068 ft elevation.

National Register Nominations

Two sites in the project area are sufficiently important, in terms of investigative potential, as to warrant their consideration for nomination to the National Register of Historic Places. Both sites, 14CF369 and 14CF1320 appear to have a high potential for the recovery of archeologically significant information. National Register nomination forms have been completed for these sites and submitted to the U.S. Army Engineer District, Tulsa, for possible later consideration by the Kansas Historic Sites Board of Review for nomination to the National Register.

Recommendations

Proper management of the cultural resources of the John Redmond reservoir calls for a variety of archeological investigative procedures and preservational techniques to be followed. Recommendations are therefore presented, within the following portions of the report, for the future management of those resources. Both general recommendations, applicable to all sites in the reservoir, and specific recommendations, applied on a site-by-site basis, have been made.

The potential for interpretive development of sites in the reservoir area appears to be almost totally lacking, and hence no site-specific recommendations of this sort have been formulated. Unlike, for example, the stone pueblo at the El Cuartelejo site in western Kansas (Wedel 1959:424-426, Witty 1971:1-3), or the well-preserved Pawnee earth lodge village at the Pawnee Monument site in north central Kansas (Witty 1968:1-5), the John Redmond sites are less than spectacular, at least to the layman, and thus carry little potential for interpretive development. The Ottumwa College site is deserving of some attention, being of local historical significance and in a rather scenic location, but the building has been almost totally destroyed and reconstruction would obviously be cost prohibitive. Moreover, the site is on privately owned land, outside the reservoir boundaries.

On the whole, the public interest could probably best be served by the maintainance of exhibits at a project facility with adequate securities. The exhibits could explain what has been learned about the prehistoric and early historic occupations of the reservoir area as a result of the various archeological investigations. Photographs, dioramas, drawings, and some of the actual artifacts recovered from the sites could be used to depict the various activities of the prehistoric and historic peoples who once lived in the area.

Two general recommendations can be made which are applicable to all sites, and indeed all areas, of the reservoir. Those recommendations call for additional survey and the monitoring of construction. Survey, in this case, is meant to consist of the locating and collecting of exposed archeological materials and other indicators. Archeological remains are brought to the surface each year, especially at sites undergoing cultivation or wave-action erosion, and it is always possible that the newly exposed material may significantly add to or alter our understanding of the site and/or local prehistory in general. It is equally possible, however, that the material may be lost due to wave action or the depredations of private collectors.

Additional survey thus has both investigative and preservational possibilities. As an investigative procedure, survey priority should be given to sites of uncertain cultural affiliation. Determination of their affiliation, by means of the finding of culturally diagnostic artifacts, would be of value in terms of settlement-pattern and culture-historical studies. As a preservational procedure, survey is especially recommended for sites undergoing cultivation or wave action erosion.

Additional archeological survey poses one way of dealing with these problems. And since several areas of the reservoir, some with previously recorded sites, could not be inspected during the 1979 investigation due to the presence of mature winter wheat, additional survey at appropriate times of the year under more optimal ground conditions would almost certainly increase both the overall site inventory as well as the artifact inventories of individual sites.

The other archeological activity recommended on a general basis is the monitoring of construction at archeological sites. The construction and expansion of roads, recreational facilities, and pipelines always stands a chance of encountering and destroying buried archeological remains. Even at sites which have been extensively excavated and appear unlikely to yield any further information, randomly located and deeply buried features such as trash pits and structural remains may yet exist. The same can be said for sites at which the primary archeological context has apparently been destroyed by cultivation.

To elaborate, the duties of a construction monitor should consist of the collecting of archeological materials and the recording and/or investigation of cultural features exposed during the construction activities. The monitor should be authorized to delay or divert construction activities when significant archeological remains are encountered. When buried remains of a significant or substantive nature are found, the

construction activities should be delayed until the remains can be properly investigated by a professional archeologist. The monitoring should be performed by a competent archeological observer, but he or she need not always be a professional archeologist. An educated and experienced amateur such as a graduate of the Kansas Archeological Training Program or a designated and specially trained project employee familiar with the archeological potential of the reservoir, would be quite adequate for most monitoring tasks, and could also carry out the recommended survey of reservoir sites. For practical reasons, the nature of the construction project and the apparent scientific significance of the site should determine the credentials and level of expertise of the monitor. When large-scale construction projects of an expensive nature are undertaken, where delays of a few days or even a few hours could result in a loss of hundreds of dollars, the monitoring should be done by a professional archeologist fully qualified to make judgement as to the significance of the remains which might be encountered. On small-scale projects such as, for example, the ditching of existing roadways, where delays are of minor importance, the monitoring could be done by a less qualified individual.

The support of construction personnel should also be enlisted especially at unmonitored sites undergoing construction, and even in areas where no sites have been recorded. Construction personnel should be made aware of the possibilities for the discovery of archeological remains and their responsibility for preserving and reporting such finds. They should be encouraged to watch for archeological remains and to delay or divert construction when they are found. For obvious reasons, it is recommended that area land-use planners route construction around known site locations whenever possible and make all efforts to minimize the constructional impact at sites where construction is unavoidable.

In addition to the two general recommendations, specific recommendations have been made on a site-by-site basis. These recommendations are presented in tabular form at the end of this chapter. They involve five sorts of recommendations, 1) no further work, 2) limited testing, 3) extensive testing, 4) salvage excavation, and 5) preservation. These can be described as follows:

1. No further work. This recommendation is made if the site has been irretrievably lost due to inundation or physical destruction, or if it is thought that the site has already been adequately investigated and is not likely to yield any more archeologically significant information.

2. Limited testing. Limited testing has been recommended for untested sites which require testing for a determination of their scientific significance. If limited testing reveals any of these sites to have buried remains of a substantive nature, a more intensive investigation and/or preservation for future investigators may be necessary. The category primarily includes bottomland sites which, due to the annually recurring process of alluvial deposition, may be buried and thus partially preserved from the adverse effects of cultivation and other activities. Upland sites, almost all of which appear to have been destroyed by cultivation, terracing, and/or wave action, have been recommended only if the destruction appears to be minimal or if they have yielded culturally significant artifacts or surficial indicators of subsurface features.
3. Extensive testing. This recommendation has been made for sites with a relatively high potential for the recovery of archeologically significant information. If extensive testing is successful, it may call for and lead into a full-scale excavation involving large areas of the site. Two sites in the project area, 14CF369 and 14CF1320, have been recommended for extensive testing. Previous testing indicated these sites to have a very high potential for the discovery of buried cultural features, primarily structural remains at 14CF1320, and trash pits and exterior hearths and possibly structural remains at 14CF369. Both sites are potential National Register sites.
4. Salvage excavation. Full-scale excavation, involving the controlled excavation of a large portion of the site, with the objective of recovering a large representative sample of all extant cultural and ecological data, has been recommended for one site, 14CF343, the Arrowhead Island site. Unfortunately, this recommendation may be a gratuitous one, since by now the site may well have been destroyed by the effects of wave action and vandalism. At the time it was last investigated, in 1978, the abundantly represented multicomponent site demonstrated a compelling potential for the recovery of archeological significant data, i.e., remains indicative of Early Ceramic Hopewellian influence and/or occupation. Excavation should be regarded as a salvage effort to be undertaken as soon as possible, since the site cannot be preserved or fully protected from further adverse impact. Due to the site's location within and just above the conservation pool, excavation will have to take place during a time of low water level in the reservoir.

5. Preservation. This recommendation primarily calls for the cessation of cultivation at significant or potentially significant sites, but calls in addition for making all possible efforts to design future roadwork, pipeline construction, and other such soil-displacing activities to avoid these areas. In short, those sites recommended for preservation should be protected in any and all ways possible until they have been adequately investigated. Long-term preservation is recommended for two of the most significant sites on government-owned land, 14CF369 and 14CF1320. Both of these potential National Register sites should be removed from cultivation and preserved indefinitely as a matter of public trust for investigators of the future, who will presumably have more sophisticated investigatory techniques and more time to devote to the investigation. Short-term preservation is recommended for sites requiring limited testing for a determination of their archeological significance. These sites should be removed from cultivation and preserved from further destruction until the testing has been completed and the site reevaluated on the basis of the testing results.

Culture resource management alternatives are not viable for seventeen sites designated during the 1979 and earlier investigations of the reservoir, since they are located on flowage easement lands and other privately owned lands adjacent to the reservoir project boundaries. No recommendations have therefore been formulated for those sites, listed in Table 4. Two of the sites were located during a previous survey of the reservoir, but most were located in 1979 as part of the Kansas Archeological Training Program survey.

TABLE 4. SITES ON PRIVATELY OWNED LAND OUTSIDE THE PROJECT AREA.

14CF35	14CF1301	14CF1311	14CF1314	14LY329	14LY336
14CF36	14CF1302	14CF1312	14CF1315	14LY330	14LY337
14CF399	14CF1310	14CF1313	14LY328	14LY331	

Specific recommendations have been formulated for all sites within the project area and are presented on a site-by-site basis in the tables which follow. The sites are grouped according to their location in the reservoir. Table 5, below, lists the eight sites now inundated by the conservation pool. Most of these sites could and should be revisited if the reservoir level is ever dropped. One of the group, 14CF330, the Williamson site, is a National Register site and should be given special attention. Salvage excavation may be required if the lower Archaic level noted during the 1963 excavations (Witty 1973:5, Schmits 1980:17) is still intact.

TABLE 5. SITES IN THE CONSERVATION POOL

Site	Cultural Affiliation	Impact
14CF301	Pomona focus	Inundated; partially destroyed by excavation
14CF306	Pomona focus	Inundated
14CF308	Pomona focus	Inundated
14CF309	Pomona focus	Inundated; destroyed by timber removal
14CF310	Indeterminate	Inundated
14CF317	Indeterminate	Inundated
14CF318	Indeterminate	Inundated
14CF330	Archaic, Early Ceramic, Middle or Late Ceramic	Inundated; partially destroyed by excavation; may have been destroyed completely by wave action

Nine sites, listed in Table 6, are located within and just above the permanent conservation pool and are subject to nearly constant water saturation, periodic inundation, wave-action erosion, and the deposition of silt and debris. Most have been largely if not wholly destroyed by the impact. For that reason, investigation of those sites which have been recommended for testing or excavation will have to take place during opportune times of low water level. The cultural affiliations listed for those sites investigated prior to 1979 are those described by Witty (1961b, 1963c, 1973) and Rogers (1979), respectively.

A total of 125 sites, listed in Table 7, are located on government-owned lands above the immediate conservation pool level, in and just above the flood control pool area. A few extend onto private land. Cultural affiliations listed for sites not investigated in 1979 are primarily those described by Witty (1961b, 1963c, 1979) and Rogers (1979), respectively.

TABLE 6. SITES WITHIN AND JUST ABOVE THE CONSERVATION POOL

Site	Cultural Affiliation	Location*	Past Work	Recommendation
14CF46	Indeterminate	OCGMA	Surveyed	Limited testing/ Preservation
14CF302	Early Ceramic and Pomona focus	FHNWR	Surveyed	Limited testing/ Preservation
14CF303	Indeterminate	FHNWR	Surveyed	Limited testing/ Preservation
14CF311	Pomona focus	OCGMA	Surveyed	No further work
14CF312	Pomona focus	OCGMA	Surveyed	Limited testing/ Preservation
14CF313	Pomona focus	OCGMA	Surveyed	Limited testing/ Preservation
14CF343	Early Ceramic and Pomona focus	Other	Tested	Salvage Excavation
14CF350	Historic	Other	Surveyed	No further work
14CF390	Historic, Middle- Late Ceramic	Other	Surveyed	No further work

*KEY

FHNWR: Flint Hills National Wildlife Refuge

OCGMA: Otter Creek Game Management Area

Other: Other government owned lands

Sites recommended for limited testing have been ranked into two groups according to their apparent significance as inferred from the abundance and nature of their artifact inventories and presence or absence of surficial indicators of subsurface features. Those sites with assumed higher potential are indicated by an asterisk in the Recommendation column and should be given first priority in future investigations.

TABLE 7. SITES ON GOVERNMENT OWNED LANDS IN AND JUST ABOVE THE FLOOD CONTROL POOL

Site	Cultural Affiliation	Location*	Past Work	Recommendation
14CF14	Middle Ceramic	FHNWR	Surveyed	Limited testing/ Preservation
14CF15	Pomona focus	FHNWR	Tested	No further work
14CF16	Archaic	FHNWR	Surveyed	Limited testing/ Preservation
14CF17	Middle Ceramic	FHNWR	Surveyed	Limited testing/ Preservation
14CF18	Indeterminate	FHNWR	Surveyed	Limited testing/ Preservation
14CF20	Archaic	FHNWR	Surveyed	Limited testing*/ Preservation
14CF21	Middle Ceramic	FHNWR	Surveyed	Limited testing/ Preservation
14CF22	Pomona focus	FHNWR	Surveyed	Limited testing/ Preservation
14CF23	Middle-Late Ceramic	FHNWR	Surveyed	Limited testing/ Preservation
14CF24	Indeterminate	FHNWR	Surveyed	No further work
14CF25	Indeterminate	FHNWR	Surveyed	Limited testing/ Preservation
14CF26	Indeterminate	FHNWR	Surveyed	Limited testing/ Preservation
14CF27	Indeterminate	FHNWR	Surveyed	Limited testing/ Preservation
14CF29	Indeterminate	FHNWR	Surveyed	Limited Testing/ Preservation
14CF30	Middle Ceramic	FHNWR	Surveyed	Limited testing*/ Preservation
14CF32	Middle Ceramic	FHNWR	Surveyed	Limited testing/ Preservation
14CF33	Indeterminate	FHNWR	Surveyed	Limited testing/ Preservation
14CF34	Middle Ceramic	FHNWR	Surveyed	Limited testing/ Preservation

TABLE 7. SITES ON GOVERNMENT OWNED LANDS IN AND JUST ABOVE THE FLOOD CONTROL POOL

Site	Cultural Affiliation	Location*	Past Work	Recommendations
14CF37	Indeterminate	FHNWR	Surveyed	No further work
14CF41	Indeterminate	FHNWR	Surveyed	Limited testing/ Preservation
14CF45	Archaic	FHNWR	Surveyed	No further work
14CF47	Pomona focus	OCGMA	Surveyed	Limited testing/ Preservation
14CF48	Early Ceramic	FHNWR	Surveyed	No further work
14CF49	Indeterminate	FHNWR	Surveyed	No further work
14CF50	Indeterminate	FHNWR	Surveyed	No further work
14CF51	Middle Ceramic	FHNWR	Surveyed	Limited testing */ Preservation
14CF304	Indeterminate	FHNWR	Tested	No further work
14CF305	Indeterminate	FHNWR	Surveyed	No further work
14CF307	Pomona focus	Other	Surveyed	No further work
14CF314	Middle-Late Ceramic	OCGMA	Surveyed	Limited testing */ Preservation
14CF315	Middle-Late Ceramic	OCGMA	Surveyed	Limited testing/ Preservation
14CF316	Indeterminate	OCGMA	Surveyed	No further work
14CF319	Pomona focus	Other	Tested	No further work
14CF320	Indeterminate	Other	Surveyed	Limited testing/ Preservation
14CF321	Pomona focus	FHNWR	Surveyed	Limited testing/ Preservation
14CF322	Indeterminate	FHNWR	Surveyed	Limited testing/ Preservation
14CF323	Archaic	FHNWR	Tested	No further work
14CF324	Pomona focus	FHNWR	Tested	No further work
14CF325	Pomona focus	FHNWR	Surveyed	No further work
14CF326	Archaic	FHNWR	Surveyed	Limited testing/ Preservation
14CF327	Indeterminate	FHNWR	Surveyed	Limited testing/ Preservation
14CF328	Indeterminate	FHNWR	Tested	No further work
14CF329	Pomona focus	FHNWR	Surveyed	Limited testing */ Preservation
14CF331	Early Ceramic- Pomona focus	FHNWR	Excavated	No further work
14CF332	Greenwood phase	FHNWR	Excavated	No further work
14CF333	Indeterminate	FHNWR	Tested	No further work
14CF334	Indeterminate	FHNWR	Surveyed	No further work
14CF335	Pomona focus- Paleo-Indian	FHNWR	Excavated	No further work

TABLE 7. SITES ON GOVERNMENT OWNED LANDS IN AND JUST ABOVE THE FLOOD CONTROL POOL

Site	Cultural Affiliation	Location	Past Work	Recommendations
14CF336	Pomona focus	FHNWR	Tested	No further work
14CF351	Historic	OCRA	Surveyed	No further work
14CF352	Indeterminate	OCGMA	Tested	No further work
14CF353	Greenwood phase	OCGMA	Tested	No further work
14CF354	Indeterminate	OCGMA	Surveyed	Limited testing/ Preservation
14CF355	Pomona focus	OCGMA	Surveyed	Limited testing*/ Preservation
14CF356	Pomona focus	OCGMA	Surveyed	Limited testing*/ Preservation
14CF357	Pomona focus- Late Ceramic	OCGMA	Excavated	No further work
14CF358	Pomona focus	OCGMA	Surveyed	Limited testing*/ Preservation
14CF359	Indeterminate	OCGMA	Surveyed	Limited testing/ Preservation
14CF360	Middle-Late Ceramic, and possibly Early Ceramic	Other	Tested	No further work
14CF361	Pomona focus	Other	Tested	No further work
14CF362	Pomona focus	Other	Surveyed	No further work
14CF363	Early-Middle Ceramic	Other	Tested	No further work
14CF364	Indeterminate	Other	Surveyed	No further work
14CF365	Pomona focus	HCERA	Tested	No further work
14CF366	Early-Middle Ceramic	Other	Tested	No further work
14CF367	Pomona focus	Other	Tested	No further work
14CF368	Indeterminate	FHNWR	Surveyed	No further work
14CF369	Pomona focus	FHNWR	Tested	Extensive testing/ Preservation
14CF370	Pomona focus	FHNWR	Tested	No further work
14CF371	Pomona focus	FHNWR	Tested	No further work
14CF372	Middle-Late Ceramic	FHNWR	Tested	No further work
14CF373	Pomona focus	FHNWR	Surveyed	No further work
14CF374	Indeterminate	FHNWR	Tested	No further work
14CF375	Indeterminate	FHNWR	Surveyed	Limited testing/ Preservation
14CF376	Indeterminate	FHNWR	Surveyed	No further work
14CF377	Indeterminate	FHNWR	Surveyed	Limited testing/ Preservation
14CF378	Indeterminate	FHNWR	Surveyed	Limited testing/ Preservation
14CF379	Indeterminate	FHNWR	Surveyed	Limited testing*/ Preservation
14CF380	Early-Middle Ceramic	FHNWR	Surveyed	Limited testing/ Preservation

TABLE 7. SITES ON GOVERNMENT OWNED LANDS IN AND JUST ABOVE THE FLOOD CONTROL POOL

Site	Cultural Affiliation	Location*	Past Work	Recommendation
14CF381	Early-Middle Ceramic	FHNWR	Surveyed	No further work
14CF382	Early-Middle Ceramic	FHNWR	Surveyed	No further work
14CF383	Indeterminate	FHNWR	Surveyed	No further work
14CF384	Indeterminate	FHNWR	Surveyed	Limited testing/ Preservation
14CF385	Indeterminate	FHNWR	Surveyed	Limited testing*/ Preservation
14CF386	Indeterminate	FHNWR	Surveyed	Limited testing/ Preservation
14CF387	Pomona focus	Other	Tested	No further work
14CF388	Pomona focus	Other	Tested	No further work
14CF389	Early-Middle Ceramic	Other	Surveyed	No further work
14CF391	Historic	FHNWR	Surveyed	No further work
14CF392	Pomona focus	FHNWR	Surveyed	Limited testing/ Preservation
14CF393	Early-Middle Ceramic	FHNWR	Tested	No further work
14CF394	Pomona focus	FHNWR	Tested	No further work
14CF395	Pomona focus	FHNWR	Tested	No further work
14CF396	Early-Middle Ceramic	FHNWR	Tested	No further work
14CF397	Indeterminate	FHNWR	Tested	No further work
14CF398	Pomona focus	FHNWR	Tested	No further work
14CF1316	Pomona focus	Other	Tested	No further work
14CF1317	Indeterminate	FHNWR	Surveyed	No further work
14CF1318	Middle-Late Ceramic	FHNWR	Tested	No further work
14CF1319	Pomona focus	FHNWR	Tested	No further work
14CF1320	Pomona focus	FHNWR	Tested	Extensive testing/ Preservation
14CF1321	Indeterminate	OCGMA	Surveyed	No further work
14LY5	Indeterminate	FHNWR	Surveyed	Limited testing/ Preservation
14LY6	Middle Ceramic	FHNWR	Surveyed	Limited testing/ Preservation
14LY7	Indeterminate	FHNWR	Surveyed	No further work
14LY8	Middle Ceramic	FHNWR	Surveyed	Limited testing/ Preservation
14LY9	Middle Ceramic	FHNWR	Surveyed	Limited testing/ Preservation
14LY10	Middle Ceramic	FHNWR	Surveyed	Limited testing/ Preservation
14LY11	Middle Ceramic	FHNWR	Surveyed	No further work
14LY12	Indeterminate	FHNWR	Surveyed	No further work
14LY321	Indeterminate	FHNWR	Surveyed	No further work
14LY322	Indeterminate	FHNWR	Surveyed	Limited testing*/ Preservation

TABLE 7. SITES ON GOVERNMENT OWNED LANDS IN AND JUST ABOVE THE FLOOD CONTROL POOL

Site	Cultural Affiliation	Location*	Past Work	Recommendation
14LY323	Pomona focus	FHNWR	Surveyed	Limited testing/ Preservation
14LY324	Indeterminate	FHNWR	Surveyed	Limited testing/ Preservation
14LY325	Early-Middle Ceramic	FHNWR	Surveyed	Limited testing/ Preservation
14LY326	Pomona focus	FHNWR	Surveyed	Limited testing/ Preservation
14LY327	Early-Middle Ceramic	FHNWR	Surveyed	Limited testing*/ Preservation
14LY332	Indeterminate	FHNWR	Surveyed	Limited testing/ Preservation
14LY333	Pomona focus	FHNWR	Surveyed	Limited testing*/ Preservation
14LY334	Pomona focus	FHNWR	Surveyed	Limited testing*/ Preservation
14LY335	Ceramic	FHNWR	Surveyed	Limited testing/ Preservation
14LY338	Indeterminate	FHNWR	Surveyed	Limited testing/ Preservation
14LY339	Indeterminate	FHNWR	Surveyed	Limited testing/ Preservation
14LY340	Middle-Late Ceramic	FHNWR	Surveyed	Limited testing/ Preservation
14LY342	Indeterminate	FHNWR	Surveyed	Limited testing/ Preservation

*Key

FHNWR: Flint Hills National Wildlife Refuge

OCGMA: Otter Creek Game Management Area

OCRA: Otter Creek Recreation Area

HCERA: Hickory Creek East Recreation Area

Other: Other government owned lands

To conclude, the results of the 1979 and previous investigations indicate that the John Redmond reservoir area contains an abundance of cultural resources. The archeological sites thus far discovered represent occupations ranging from the Paleo-Indian era up to and including the Historic era, or from approximately 12,000 B.C. to the earliest days of Euro-American settlement. Occupations dating from the Middle Ceramic period are particularly well represented, and several of the sites can be considered to be quite important in terms of both the information already gathered and the information yet to be gained. Moreover, it is probable that more sites exist in areas which could not be adequately investigated during the 1979 and earlier surveys.

The importance of the archeology lies not so much in each individual site, but in the interrelationships of the sites in the reservoir area as a whole. The value of the sites lies within the scientific data which can only be realized and preserved through planned and judicious observation, excavation, recovery, and analysis. The knowledge that has thus far been gathered and that which can be obtained in the future can be considered as an important contribution to the archeology of the Osage Cuestas region and of Kansas as a whole.

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